

ARCHIVES OF OTOTOLOGY.

A CASE OF THROMBOPHLEBITIS OF THE CAVERNOUS SINUS, COMPLICATING AN EMPYEMA OF THE SPHENOIDAL SINUSES AND ETHMOIDAL CELLS, MISTAKEN FOR A THROMBOPHLEBITIS OF THE LATERAL SINUS.

BY DR. C. E. FINLAY, OF HAVANA, CUBA.

H. L. P., a native of Grand Rapids, O., æt. sixteen years, and by profession a seaman on board U. S. S. *Essex*, was brought in an ambulance to "Mercedes" Hospital, of Havana, on the morning of April 1, 1903.

Dr. G. L. Angeny, of the *Essex*, who accompanied him and who had had him under his charge, gave me the following **history**: The patient had had a purulent discharge from his left ear for several weeks. Two days before, he began to have intense pain in the left ear and other symptoms of suppurative middle-ear disease; he was then admitted to the sick-list with a temperature of 104° F. The *Mt* had been punctured on the night of March 30th, and a profuse purulent discharge started. The discharge continued part of the next day, when it diminished considerably, and the pain and high temperature returned. Patient complained of diplopia and was delirious.

Condition on Admission.—The patient was delirious, unconscious, semi-comatose; the skin was cold and clammy. Temperature, 104° F. Pulse, 120, small, irregular, and intermittent. Left ear: small perforation of the membrana tympani, with a small amount of pus in the external auditory meatus. Eyes: paralysis of left external rectus; pupillary reaction normal; fundi normal.

My *diagnosis* was a sinus phlebitis or cerebral abscess, complicating an O. M. P. C.

I advised an immediate operation, notwithstanding the almost hopeless prognosis.

Operation.—The patient was immediately prepared for operation and chloroformed. On being placed on the table, I noticed a leechlike swelling parallel and a little below the left superior orbital margin. I called my assistants' attention to it, stating that it showed that there was some obstruction in the blood flow through the ophthalmic vein, and that, combined with the paralysis of the left external rectus, it showed that the cavernous sinus was involved, and that the prognosis was still more forlorn. Still thinking, however, that the original trouble lay in the ear, I proceeded to shell out the mastoid, only a minute amount of pus being found in the antrum and middle ear. The tegmen tympani and bone over the lateral sinus were found intact. I proceeded, notwithstanding, to lay the lateral sinus bare; its consistence and color were normal, and on puncture healthy blood flowed through the needle. The temporal fossa was next opened externally, 2 cm above superior margin of the external auditory meatus: the dura was found healthy, the pia slightly cloudy; puncture of the brain in several directions was negative. Stimulation with strychnine having been necessary several times in the course of the operation and the patient's general condition being very poor, the wound was closed and the patient removed to his bed.

The temperature fell to 102° F., and the patient partially regained consciousness, but during the night the temperature rose again, the patient was violently delirious, the heart action became very poor, and notwithstanding repeated injections of strychnine and other heart stimulants, application of external heat, etc., the patient died at 4 A.M.

Autopsy.—No pus was found in the middle ear or antrum, no pus or sign of bone disease in the neighborhood of the temporal bone.

The dura was normal. The pia over the convexity showed some loss of transparency; that at the base was the seat of a dense plastic exudation.

Brain substance, cerebellum, and lateral sinus were normal; no sign of abscess. Cavernous and circular sinuses occupied by a purulent clot, which extended into the left ophthalmic vein. The sphenoidal and posterior ethmoidal cells were occupied by thick, yellow, fetid pus. After the patient's death, I wrote to both the family of the patient and Dr. Angeny; both answered that neither at home nor on board the *Essex* had he ever complained or showed any evidence of nose trouble.

Wholly unexpected were the *post-mortem* findings of this, to me, highly instructive case ; as, although the paralysis of the left external rectus and the dilatation of the left ophthalmic vein had made me suspect an implication of the left cavernous sinus, till the moment of the autopsy I located the original lesion in the ear and the intracranial lesion responsible for the lethal issue in its immediate neighborhood. The autopsy showed, without a doubt, that the middle-ear trouble was secondary to the nose trouble and in no way responsible, primarily or secondarily, for the symptoms which preceded the fatal termination of the case, these being solely due to the cavernous-sinus complication of the spheno-ethmoidal empyema.

This case, with so clear a history of prior ear disease and in which the symptom-complex so exactly corresponded to one of its best-known complications, shows that even in the clearest cases one must be somewhat guarded in giving an exact diagnosis. A correct diagnosis was, I think, almost impossible ; as, even giving their full value to the cavernous-sinus symptoms, the previous history and actual existence of the middle-ear trouble would more than counterbalance them and tend to the location of the primary lesion in the ear.

Another important lesson is that empyema of the spheno-ethmoidal cells may exist, and even bring about death, with no noticeable outward manifestations.

The necessity of not neglecting any nose trouble of this nature is self-evident, as at the stage of the disease in which the patient was brought to the hospital the case was hopeless, even if a correct diagnosis had been made, as one can scarcely seriously contemplate reaching the local lesion through the orbit or by means of a craniectomy even as a "forlorn hope."

CLINICAL EXPERIENCES WITH THE ENLARGED PHARYNGEAL TONSIL.¹

BY DR. H. GRADLE, CHICAGO.

THE writer praised the completeness of the first description of adenoids by W. Meyer, to which but little of importance has been added since his first publication. The characteristic facial expression, or adenoid habitus—the half-open mouth, the thick upper lip, the thin and pinched nostrils, and the sleepy look of the lower eyelids,—suggests the diagnosis of hypertrophy of the pharyngeal tonsil as a rule, but there are exceptions in both directions. The writer has seen the same facial expression in children with suppurative rhinitis with comparatively narrow nasal passages, who had either a normal or, at most, a very slightly enlarged pharyngeal tonsil. In the latter case, however, even this slight enlargement should be removed to effect a cure. But in these instances the operation is not followed by the immediate and pronounced benefit usually seen. The adenoid habitus may be wanting in children with unmistakable enlargement of the pharyngeal tonsil, especially when the latter causes disturbances less by its size than by its periodic inflammation.

The nasal obstruction is but partly due to the direct blockage of the post-nasal space by the hypertrophy. When such is the case, the child can neither breathe through its nose nor blow its nose. Most patients, however, breathe quite easily during daytime. The real trouble begins only when they lie down or during an acute "cold." This varia-

¹ Read before the Otologic Section of the New York Academy of Medicine, October 8, 1903. Abridged by the author.

tion in nasal obstruction seems to depend on periodic turgescence of the posterior end of the turbinals. Occasionally this can be seen in the post-nasal examination. It explains why it sometimes takes days or even weeks before the full benefit of a satisfactory operation is realized, because the wound keeps up a reflex turgescence.

The variable turgescence explains likewise why the characteristic adenoid "dead" voice is not equally pronounced in all patients. It is always characteristic in case of large hypertrophies, but may occur even in a normal person during a severe coryza. On the other hand, the inattention or want of mental concentration of some adenoid children—"aproxia"—depends on the size of the hypertrophy and not on vascular distension. It was observed in about 15 per cent. of my patients, and only in cases of large growths, but not in every instance.

The writer recalled the distress and restlessness often caused by adenoids during sleep, which may lead to night terror and nightmare. Two instances of asthma were stopped, as far as the observation went, by the removal of the growth. Cough, so frequently present with adenoids, is usually due to a subacute bronchitis. But many instances are seen, too, in which it is a reflex cough, as it ceases immediately after operation. Enuresis is a very common symptom, sometimes promptly stopped, sometimes only gradually, by operation, and occasionally not influenced at all.

According to the writer's experience, much of the mischief started by adenoids is due to their periodic state of inflammation. This is not necessarily continuous. During a quiescent period, a moderate growth may cause scarcely any symptoms except slight blockage. But all adenoids are subject to frequent spells of inflammation, often subacute from the start, and sometimes lasting as long as the inclement season. Carefully taken histories show that attacks of bronchitis and inflammatory lesions of the ear are preceded by this inflammatory condition in the enlarged tonsil. Even the subacute involvement of the Eustachian tube, commonly called Eustachian catarrh, the writer does not attribute to the mere presence of, or pressure by, the adenoids, for they do not ordinarily extend close to the Eustachian orifice.

It is the extension of the inflammation from the pharynx which proves the menace to the ear.

The writer called attention to the relation of adenoids to phlyctenular disease of the eye. A large proportion of children with phlyctenular keratitis have adenoids, and in the writer's experience the immediate removal of the latter is often of unmistakable influence upon the course of the eye disease.

The writer confirmed the striking influence of adenoids upon the general nutrition in some instances. In about 20 per cent. weight and growth were below par and the children were frail and anæmic. This influence does not depend on the size of the growth. It may be due to a small tonsil which caused very little obstructive symptoms. Some instances suggest that adenoids may exert a poisonous influence on the system. The gain in weight and growth and the recovery from anæmia are often very striking after operation.

While in young children the operation is always followed by immediate and striking benefit, the results are not invariably so satisfactory, or at least so prompt, in older children. This is due to the complication by other hyperplastic lesions often induced by adenoids in the course of time. The faucial tonsils which are so often enlarged in connection with the pharyngeal tonsil, shrink not infrequently to a moderate extent and lose their irritated appearance after adenotomy. But spurs and ridges on the nasal septum and hypertrophies of the posterior turbinates, which seem to be favored by the long persistence of adenoids, continue, of course, in producing symptoms even after removal of the latter.

The writer considers the enlargement of the pharyngeal tonsil the consequence of repeated attacks of coryza during the first few years of life. He has observed this mode of origin in all instances which he could personally watch or trace. If no morbid growth of the tonsil has taken place within the first three or four years of life, there seems to be no further tendency to hypertrophy. The predisposition is often hereditary. It is also marked in instances of degeneracy, especially in imbeciles and in deaf-mutes.

Adenoids are strikingly common in scrofulous children. There are some instances in whom the so-called scrofulous

stamp is practically the outcome of the enlarged pharyngeal tonsil and disappears with its removal. But, on the whole, we must assume that real scrofulosis is the result of slight chronic poisoning of the system from some tubercular focus in the lymph glands. The enlarged pharyngeal tonsil is, as a rule, itself not tubercular. Only in about five per cent. of instances are tubercles found anatomically which cause no symptoms during life. The frequency, however, of enlarged lymphatic glands in the neck, in connection with adenoids, raises the suspicion that the diseased tonsil may permit the tubercle bacillus to enter the system without its causing local manifestations in the tonsil itself.

For the removal of adenoids the author recommends highly a personal modification of the Schuetz guillotine-shaped pharyngotome. The ordinary-sized instrument can be used in all subjects older than about three to four years. For younger children a smaller pattern is required. With the head thrown back, the lower jaw well depressed, the guillotine pushed firmly upward and backward, the entire tonsil is bound to be cut off in one sweep. A slip, as it sometimes happens with the Gottstein knife, is almost impossible. In over 200 instances there were but two in which fringes of adenoid tissue were left of sufficient size to permit a second operation. With this instrument, persistence of hemorrhage was never observed. In former experience a lasting or relapsing bleeding recurred in about one per cent. and was always traceable to incompletely detached tags. As the adenotome makes a clean sweep this danger is removed.

The quickness of the operation makes narcosis entirely unnecessary, except when the faucial tonsils are to be removed in the same sitting. In view of the great fatality of chloroform, as shown by Hinkel, the author considers this agent inadmissible. Ether, far less dangerous, has its drawbacks. Nitrous-oxide narcosis is quite practicable for simple adenotomy. But the writer finds that with his method of operating the pain is not sufficient to necessitate narcosis. For the removal of remnants of the tonsil left by an incomplete operation, the cold snare is very serviceable and but little painful. He uses a straight snare through the mouth with the wire loop bent upward.

ON THE PATHOLOGY AND TREATMENT OF CHRONIC PURULENT OTITIS.

- I. INDICATIONS FOR THE REMOVAL OF THE HAMMER AND ANVIL.
- II. RELATIVE FREQUENCY AND LOCALIZATION OF DISEASE OF THE OSSICLES.

BY DR. SUCKSTORFF,

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Abridged Translation from *Zeitsch. f. Ohrenheilk.*, vol. xlv., p. 75, by Dr.
ARNOLD KNAPP.

I.

IN 1879 Kessel placed the indications for the removal of the hammer and anvil as follows:

1. Intractable stenosis of the tube.
2. Total calcification of the drum membrane.
3. Caries of the ossicles.
4. Anchylosis of the stapes if associated with disturbing tinnitus.
5. Cholesteatoma of the tympanum and of the mastoid process which is not improved by the usual methods of treatment.

Stacke,¹ in his paper on the indications for the excision of the hammer and anvil, in 1891, came to about the same conclusions.

The first two indications are so rare that they may be disregarded. In the fourth, this treatment has been abandoned on account of the very questionable results obtained,

¹ *Arch. für Ohrenheilk.*, vol. xxxi.

and, in the case of the fifth, the so-called radical operation is probably now universally performed. The third indication, however, especially brought forward by Schwartz and his pupils Ludewig and Kretschmann, has proved to be an excellent means of healing chronic purulent otitis with or without accumulations of epidermis which are localized to the attic. We think that this indication should have a broader use, as ossiculectomy not only is indicated in diseases of the ossicles and in caries of the attic even if the hammer and anvil be healthy, but also in cases of purulent mucous suppuration from the attic, if this has not given way to a careful and consistent treatment with the tympanic canula. The hammer and anvil, with their ligaments and mucous folds, make the attic a very complicated cavity from which it is often very difficult to remove purulent secretion either by irrigation with the tympanic syringe or by other means. After the removal of the ossicles, the many pockets will lie open, and the complicated cavities are converted into one cavity more accessible to irrigation, so that we are often able to heal the suppuration. The removal of the healthy ossicles in these cases will be undertaken the more readily if the ossicular chain be already interrupted, and consequently worthless to the function of the ear; the useless ossicles act like foreign bodies, complicate and keep up the suppurative process.

This indication has of course been mentioned by a number of others, though it seems to us, from the experience of the last few years in our clinic, it has not been sufficiently emphasized. We have observed a number of suppurations in the attic with and without accumulations of epidermis, with and without disease of the ossicles, where long-continued syringing with the tympanic canula was without avail, but where the extraction of the healthy hammer led, in a very short time, to a permanent cure. Some of the cases of this kind, which were not healed, were cases in which there was an associated disease of the bone in the antrum or in the mastoid process, or a focus in the lower part of the tympanic cavity. In these cases we have later been forced to perform the radical operation. Unsuccessful extractions of the ossicles in cases where bone involvement

had not been previously diagnosticated will probably always occur, though they should be rare on proper selection of cases. It seems to me hardly right that, because we cannot always distinguish between simple catarrhal suppuration in the attic and bone disease, we should in all cases omit ossiculectomy and immediately proceed to the radical operation. In suitable cases the extraction of the hammer has been a most favorable procedure, especially as the patient will consent to an extraction of the ossicle so much more readily as it deprives him of his work only for a few days and does not subject him to the long after-treatment of the more radical operation. In other cases, though the suppuration from the attic may cease, it can continue from the neighborhood of the tympanic mouth of the Eustachian tube. The cause of this is either a suppurating pharyngeal tonsil which must be removed, or an inflammation in the tubal cells which we may attempt to cure by irrigating through the tube with the catheter, or even in the inverse direction from the tympanic cavity with the tympanic canula. As regards the technic of the operation, we have nearly always removed the ossicles in narcosis. It is thus only possible to work quietly and without doing any damage. The hemorrhage in most cases can be arrested by a brief packing of the canal or by introducing pledgets of cotton soaked in a solution of ferripyrrin and cocain. Recently we have had very good results by applying adrenalin ten minutes before the operation. The incision of the drum and removal of the adherent hammer were always possible without hemorrhage. The operation was performed according to the conditions found present. If some of the drum remained, it was cut away and the adherent hammer loosened by a hook. The tendon of the tensor tympani was divided by a tenotome, though frequently it had been destroyed by the purulent process. For removal of the hammer we make use of the small polyp-forceps of Hartmann. We have found the snare in the presence of hemorrhage difficult to apply, and a fracture of the handle was not excluded. The anvil is displaced with Kretschmann's instrument. If this does not succeed readily, we do not persist, as a facial paralysis is not impossible after

a too energetic search for the anvil, and experience has shown us that in many cases the anvil is absent. Moreover, the following cases show that the remaining behind of the anvil does not necessarily interfere with the healing.

W. S., forty-two years old. Exacerbation of a chronic otorrhœa for 1½ months. There is a small marginal perforation up and in front, closed by a granulation. The granulation was removed with a curette. The epidermis masses appearing in the perforation were removed with the tympanic syringe. As this treatment, continued for months, was without avail, and the defect in the outer wall of the attic disclosed a large granulation in the position of the head of the hammer, we decided to remove the hammer in narcosis. No attempt was made to remove the anvil. After a few days the middle ear was dry and remained so for the period of observation—of over two years.

A. B., forty years of age. Left-sided otorrhœa after scarlet fever. Polypi and white masses repeatedly removed. The drum membrane is represented by a small triangle attached to the hammer, which is adherent to the promontory. The tympanic cavity is covered with epidermis. The hammer is removed and found to consist of the handle and the short process. The tympanum became dry in a very short time. After one and three-quarters years the ear was still dry. The anvil, which was previously invisible, has now slipped down and has become attached by cicatricial bands.

In some cases the simple ossiculectomy is not sufficient where the outer wall of the attic is diseased. This complication could usually be diagnosticated before operation, and we then removed the outer wall of the attic with a burr, as has been described by Sturm (these ARCHIVES, vol. xxxi.). After removing this wall of the attic, the anvil, if it was still present, came readily into view and could be easily extracted with a forceps. The after-treatment consisted of cleansing the tympanic cavity with a syringe and the tympanic canula. The irrigation with water was always followed by that of alcohol.

Before giving results, I should like to state what cases we regarded as cured. The period of observation must be at least one year, and no purulent secretion or crusts must

form in the tympanic cavity. It is, therefore, perfectly proper to regard cases as cured where a small relapse occurs which lasts for a few days, indirectly connected with the ordinary disease and due to an infection from the external auditory canal or from the tube.

In 72 cases, the hammer or the hammer and anvil were extracted 78 times on account of chronic suppuration. In 67, the hammer alone was extracted; in 1 case, the anvil; and in 10, the hammer and anvil. In 11, the radical operation had to be performed subsequently, as the result of the ossiculectomy was not satisfactory. Removal of the outer wall of the attic with a burr was done in 4. Of the 72 patients, 3 died, 2 from tuberculosis and one from scarlet fever. Of the 78 cases, 20 have been observed for a period of from one to five years. Of these, 11 showed no relapse, 5 suffered from a transient slight relapse, making 16; 2 were improved, and 2 were unimproved. Of these 20 cases, the hammer alone was extracted in 14. Of these, 5 have remained healthy without relapse and 5 with a slight transient relapse, which makes 10 healed cases where the hammer was extracted; improved, 2; unimproved, 2. Of the above 20 cases the hammer and anvil were removed in 6. All of these were permanently cured.

The length of treatment of the cases which we observed for at least one year varied between three and one-half and thirty weeks; the average was eleven weeks.

The hearing tests, so far as it was possible to make them, showed in no case a diminution of hearing.

In the 16 healed cases, the hammer and anvil were extracted 6 times. In the other 10 cases, the anvil was absent, or it was not possible to displace it with the anvil hook. As has before been stated, we do not persist in this step. In 4 cases which were not healed, the hammer alone could be extracted. On the other hand, it cannot be stated that the remaining behind of the anvil is responsible for the failure. In one case, the suppuration was distinctly kept up from the region of the tube. In the second case, the radical operation was made necessary on account of a disease of the bone. In cases 3 and 4, suppuration, very much diminished, continued after the extraction of the hammer and in-

creased after each exposure to cold. The constitution of the patient in these cases was, unquestionably, of some moment.

The results of our ossiculectomy in purulent otitis are: of 20 cases observed for more than one year, 16 cured, 2 improved, and 2 unimproved. In the other cases, which were not followed for such length of time, the result is probably a similar one, as the patients remained away on non-recurrence of the suppuration.

II.

If we take advantage of the ossicles obtained from the radical operation, we have, in addition to those above mentioned, a large number to study. In order to compare the frequency of carious disease—usually lacunar erosions—of the hammer to that of the anvil, it is only justifiable to make use of the material obtained from the radical operation.

We have an uninterrupted series of 106 radical operations, and disease of the ossicles was found to be distributed as follows:

Both ossicles: healthy, 5; diseased, 13; absent, 48.

With a healthy hammer: the anvil was found diseased, 10; absent, 2.

With a diseased hammer: the anvil was found healthy, 3; absent, 22.

Absence of the hammer: in cases of healthy anvil, 0.

Absence of the hammer: in cases of diseased anvil, 3.

In other words, the hammer was found diseased or absent 89 times: diseased in 36%, and absent in 48%.

The anvil was found diseased or absent in 98: diseased in 24%, and absent in 69%.

Ludewig¹ found, in 75 cases, the hammer diseased in 60%, the anvil in 85%. These two statistics cannot be directly compared, as Ludewig employed ossicles which were extracted through the canal. The operation in his cases was undertaken for presumable disease of the ossicles, and one or both of the ossicles must necessarily have been present. In our statistics, where the ossicles were only obtained from the radical operation, those cases are also counted where one or both ossicles have been destroyed by the suppurating

¹ Ludewig, *Arch. f. Ohrenheilk.*, vols. xxix. and xxx.

process. The same objection holds good for the statistics of Schroeder.¹

To study the site of the disease in various ossicles, we have made use of all available ossicles, whether obtained by the radical operation or by ossiculectomy. The results show that, coinciding with what Schwartz emphasized at the meeting of German naturalists in 1896, the hammer was usually affected in the region of the head and the manubrium, and the anvil in the region of the long process.

The four anchyloses of the hammer and anvil presented the same shape. The hammer was healthy in one case; in one the handle was slightly shortened; and in two the anterior surface of the head and neck was somewhat eroded. The short process of the anvil in all cases was shortened and the long process was wanting, so that the ossicle was transformed into a pear-shaped body. The formation of osteophytes in addition to erosion was present in 5 among 126 cases, once in the anvil and four times in the hammer. In two cases the osteophytes were situated at the margin of the articular surface of the hammer. A destruction localized to the articular surface was not present, agreeing with the findings of Schwartz, Grunert, and Ludewig.

Finally, I want to give the situation of the disease in the ossicles where the erosion was at the beginning limited to a circumscribed area.

In 35 hammers the commencement of the disease was situated: in an area on the anterior surface of the head, 3 times; in an area directly over the crest of the neck, 3 times; at the end of the manubrium, 21 times; in an area on the posterior surface of the head, 3 times; directly at the angle between the head and the neck, 2 times; directly above the insertion of the tensor, 1 time; in the area anterior above the long process, 1 time; at the anterior lateral aspect of the short process, 1 time.

Of 15 anvils the disease began: at the end of the long process, 9 times; at the end of the short process, 3 times; on the medial surface of the body, 2 times; at the base of the long process on the medial side, 2 times.

¹ Schroeder, *Arch. f. Ohrenheilk.*, vol. lxix.

ON THE CAUSATION AND PREVENTION OF
BONE NECROSIS IN THE COURSE OF
CHRONIC PURULENT OTITIS.

BY DR. A. SCHEIBE, MUNICH.

Translated by Dr. ARNOLD KNAPP.

ON studying the proportion of cases of chronic purulent otitis which lead to necrosis of bone, we find that most authors, like Schwartz, Steinbruegge, Habermann, and others, confound the necrotic and the simple inflammatory processes in bone, and discuss them under the common title, "Caries and Necrosis." These are produced partly by general causes,—constitutional taint and acute infectious diseases,—and partly by local conditions, such as retention and putrefaction of pus (Schwartz), and retention by polypi or cholesteatoma (Habermann). It is not possible to judge in what degree these causes are responsible for the osteitis on one hand and for the necrosis on the other. The question is also made difficult from the fact that most authors, with the exception of Politzer, do not separate bone diseases occurring in the course of acute from those occurring in the course of chronic purulent otitis, although they are entirely different, especially in regard to their etiology.

Bezold was the first to insist upon the separation of the simple inflammatory from the necrotic bone-process, and drew attention to the difference in the anatomical and clinical picture. Necrosis, according to him, was the reaction of the diseased and weakened general system as opposed to osteitis as a reaction of the healthy organism.

Necrosis can follow all general diseases which have depreciated the health of the organism, as well as follow a simple empyema. On the other hand, necrosis may be the result of exclusively local acting causes, such as processes of putrefaction, detachment of the external periosteum and of the dura, as well as the accumulation of epidermis in the middle-ear cavities.

Recently Koerner, in his book on *The Purulent Diseases of the Temporal Bone*, has sharply separated necrosis from the carious processes. He, however, only discusses necrosis in the course of acute purulent otitis. Agreeing with Bezold, he concludes that necrosis in the course of an acute suppuration generally occurs in constitutional diseases, though its appearance in the healthy organism cannot be entirely excluded. The necrosing process in the chronic cases is not discussed at all.

In 1892, I separated necrosis from osteitis, and discussed the etiology of necrosis in acute purulent otitis on a basis of 4 cases. In these 4 patients the bodily condition was a weakened one as opposed to the simple empyemata. I shall return to the bacteriological conditions found present in these cases.

The investigation of necrosis in the course of acute purulent otitis was continued, and I reported upon my results at the meeting of the German otologists in 1900. This new series consisted of 13 cases of necrosis occurring in the course of acute purulent otitis, which I had especially examined for the cause of necrosis in each case.

In all of these cases there were symptoms of severe general disturbance. These in order of frequency were: pulmonary tuberculosis, pyæmia, and sinus phlebitis, diabetes, influenza, and scarlet-fever. In the healthy organism, the acute suppurative otitis had not led to a destruction of bone in a single case.

The pus was examined bacteriologically. The streptococcus was generally found, and the diplococcus pneumoniæ was present in only one. If we compare this result with the bacteriological examination of all acute purulent otitides, where the streptococcus and the diplococcus, as is well

known, occur with equal frequency, we should be inclined to regard the preponderating presence of the streptococcus as the etiological factor in the production of necrosis. The streptococcus, however, cannot be given any essential etiological importance, as it does not produce necrosis in the healthy individual, as I was able to show by a number of examples in 1892. Its frequency in cases with necrosis is more likely due to the fact that it occurs more frequently than the diplococcus in weakened constitutions, especially in the otorrhœa after infectious diseases.

Retention of pus does not play an important rôle in the causation of necrosis in acute otitis, for in half of my cases the necrosis did not develop until after the opening of the mastoid process.

Putrefaction, on the other hand, is not entirely without influence. The discharge in 9 cases was without odor, but in 4 (30 %) it was fetid.

My investigations show that the development of necrosis in acute purulent otitis depends exclusively, or almost exclusively, on the condition of the general system, which coincides with the experiences of Bezold and Koerner.

As a supplement to the above investigation, I have examined a large number of cases of necrosis in the course of chronic purulent otitis. In each case I endeavored to determine from what conditions the necrosis developed. The tuberculous middle-ear suppurations will be excluded, because necrosis is a constant condition, and its cause is well known. The necrosis in these cases occurs from the disintegration of the tubercle (Habermann); moreover, the severe general disturbance in nutrition following phthisis is of great importance in producing the decay of bone, as Bezold has shown. The necrosis in syphilis is similar. It develops from the disintegration of the gummata.

The non-specific chronic middle-ear suppurations remain for our investigation. There were 34 autopsy reports. In some cases the trouble had led to an endocranial complication, in others it was uncomplicated. In 25 of the 34 cases, the middle-ear suppuration was the cause of death. Of

these 25 cases, necrosis was present in 16 (64 %), a number which describes the great importance of necrosis for the transmission of chronic purulent otitis to the interior of the skull.

In 3 cases, the middle-ear suppuration was in no connection with death, and in these cases the inflammation was not of a necrotic character.

In 6 cases, it was uncertain whether the endocranial complication was due to the chronic middle-ear suppuration. In these 6 cases the bone was necrotic in 1.

Of the remaining 17 cases suited for this investigation, 16 were taken from the dispensary and 1 from the private practice of Professor Bezold, a condition which is explained by the fact that disregard of the otorrhœa is an important factor in the production of necrosis.

I first want to specify what cases I regard as necrosis. As the bone substance, the periosteum, and the medulla are uniform structures, I have considered under necrosis not only the cases with the formation of sequestra, but those where the bone was exposed and discolored but still in connection with healthy bone. If this condition occurs in the interior of the middle-ear cavities, the periosteum is always necrotic, the medullary substance is decayed to a varying depth, and if the process continues a sequestrum is formed.

If we wish to describe this anatomical picture by a special name, then caries necrotica is the most suitable. Unfortunately the word "caries" is generally regarded as a simple inflammatory softening process of the bone in acute otitis which has nothing to do with necrosis, so in order to avoid being misunderstood I shall not make use of the word "caries" and consider the above cases as illustrating the first stage of necrosis, while the second stage is described by the formation of sequestra. These two stages are frequently found conjointly in the same case, and clinically we frequently observe how the exposed bone gradually becomes detached in the form of a sequestrum, unless under changed and improved conditions the exposed bone recovers and becomes covered with the soft parts.

In 17 cases, the bone was exposed in 10; sequestra were present in 7.

In 5 of the latter cases there was only 1 sequestrum; in the others there were several. Sequestration had exposed the cranial cavity in 3 and the labyrinth in 1. In the remaining 3 cases, superficial particles of bone had been cast off from the inner surface to the middle-ear cavities. As has been previously noted in several of the cases of sequestra, there was a simultaneous condition of necrosis without sequestration in other parts of the middle-ear cavities. The first stage of necrosis, in other words, was much more frequent than the second. In the cases of exposed bone, the surface in half of the cases was smooth and in the other half rough. The color was dark green or yellow. In one case, after irrigation of the canal, drops appeared on the apparently healthy tegmen, which speaks for necrosis extending into the medullary spaces.

The necrosis was found in the upper middle-ear cavities more frequently than in the tympanum or the tube. The aditus and antrum were generally both affected.

In frequency the	antrum	was affected	13 times
"	aditus	"	" 12 "
"	tympanum	"	" 4 "
"	tube	"	" 1 time.

The question is, What led to the necrosis of the bone and of its soft coverings in these cases of middle-ear suppuration?

Intercurrent infectious disease and severe disturbances of nutrition, which are so frequent in acute purulent otitis, were absent, with the exception of sinus phlebitis in 1 case. In 9 cases there was no other disease than the aural affection and its consecutive endocranial complication. In 6, the autopsy revealed diseases of other organs, but of a mild character. Sinus thrombosis, which is one of the causes for the decay of the bone in the acute processes, was present in 10, and in 1 there was an old obliteration of the sigmoid sinus. On the other hand, this is of secondary importance, as in most cases the necrosis was primary and the sinus thrombosis the secondary condition.

We must therefore search for the cause of the necrosis in chronic non-specific purulent otitis exclusively in local conditions. We find that of the 17 cases, 16 were complicated with cholesteatoma of the upper middle-ear cavities. It therefore seems that necrosis is usually associated with cholesteatoma, and is not to be feared in chronic middle-ear suppurations without cholesteatoma. The putrefaction of pus is not a less important cause, as the discharge in 16 out of 17 cases was fetid.

It would seem that cholesteatoma only produces necrosis when the pus is fetid. If the pus is without odor, the presence of necrosis is not possible whether cholesteatoma be present or not. Clinical experience shows that the discharge in most of the cases of cholesteatoma is fetid. If, however, only a small proportion of these is complicated with necrosis, we must search for an additional cause. This is, as our series of cases shows, to be found in the retention of pus. In all of the 17 cases, a retention of pus in the middle-ear cavities could be demonstrated. The retention was caused by cholesteatomatous masses 12 times and by polypi 5 times. The cholesteatomatous masses occupied:

The canal, tympanum, aditus, and antrum in . . .	3 cases.
The tympanum, aditus, and antrum in . . .	2 "
The tympanum, aditus, and anterior part of the antrum in	1 case.
The aditus and antrum in	3 cases.
The antrum (pus under pressure) in	1 case.
Cholesteatomatous masses were removed from both with the tympanic canula in . . .	1 "
Cholesteatoma was removed from the other side fourteen days before death in . . .	1 "

In these 12 cases, the cholesteatomatous masses were apparently large enough to cause a retention of pus. In 5 of these there was no other cause for retention. In the other 7, the hypertrophies in the canal and in the tympanum were large enough in only 4 to cause any retention. In the 4 remaining cases of cholesteatoma where the cholesteatoma was not large enough to cause retention, polypi and granula-

tions were present. The granulations in these 4 cases occluded

the entire canal in	1
the bony canal in	1
the aditus in	1
granulating masses were noted in	
the aditus and antrum in	1

There remains a single case of necrosis where no cholesteatoma was present. It is not likely that its presence was overlooked, because every case of chronic suppuration is carefully examined in this regard, and in doubtful cases recourse is had to the microscope. This case was a peculiar one of chronic middle-ear suppuration with the formation of polypi in a bleeder. The excessive hemorrhage which occurred after removal of the polypi was only controlled by packing the canal. This was immediately followed by severe symptoms, and death ensued in four days from sinus thrombosis and meningitis.

In my practice, I have observed 852 cases of chronic purulent otitis. In 20, the bone was found exposed or a sequestrum was present; 10 of these were tuberculous and 1 syphilitic, and 1 was complicated with carcinoma. These are, therefore, to be disregarded. In one case of perforation through Shrapnell's membrane the probe apparently detected a small area of exposed bone, but this is uncertain as the suppuration ceased after four days. There remain 7 cases of necrosis. This number shows that in patients of the better classes necrosis in the course of chronic purulent otitis is a rare feature. It seems that in private practice necrosis following chronic suppuration is less frequent than after acute suppuration. The complications found in these 7 cases were 1 sinus thrombosis and circumscribed meningitis, 2 labyrinthine suppuration, and in the other 4 acute inflammatory symptoms of the external surface of the mastoid. There was no case of death. In 6 of these, the radical operation was performed. The necrosis may be divided in these 7 cases as follows:

Exposed bone in	2
Sequestrum in	5

In 2 of these, the sequestra were complicated with the presence of bare bone.

The site of the necrosis was the mastoid process in 7: namely, the antrum 4 times, twice the anterior and once the external wall of the mastoid process, the tympanum in 2.

In looking for the cause why necrosis occurred in these 7 cases, we find that in only 1 an intracranial complication existed, and that the other patients were healthy. In all 7, cholesteatoma and putrefaction of pus were present. Retention occurred in 6; in the 7th, polypi had been previously extracted. The cause of the retention was cholesteatoma in 1 case and granulations in the other 6. The granulations occluded the depth of the canal in 2, the perforation in the posterior and upper quadrant in 1, the aditus in 2; the polyp had been previously removed in 1.

We saw that in the mild cases in private practice polypi furnish the cause for the retention, while in the fatal cases in the dispensary this cause is furnished by the cholesteatomatous masses; in other words, both can cause retention and necrosis, but retention from polypi does not lead so frequently to intracranial complications as retention from cholesteatoma. This may be due to the fact that in each cholesteatoma we find the bony walls of the middle-ear frequently rarified or defective.

It is also noticeable that the second stage of the necrosis occurs more frequently in the mild cases of private practice than in the fatal cases of the dispensary, where the first stage is more frequent.

Our results may be stated as follows:

1. Necrosis in chronic non-specific middle-ear suppurations are exclusively of a local nature. The suppuration only acts in a necrotic manner when pus is retained and putrefies.

2. This condition generally occurs only when the middle-ear suppuration is complicated by cholesteatoma.

It is possible for necrosis to have occasionally another cause. In one patient that I observed, the death of the bone followed the use of carbolic acid. The detachment of the external periosteum and the dura, which is regarded by Bezold as one of the likely causes of necrosis, did not occur

in any of my cases. There was no case under $4\frac{1}{2}$ years of age. It is possible that, especially at this age, the external surface of the antrum may be cast off after elevation of the periosteum.

It is striking how rarely chronic suppuration without cholesteatoma causes necrosis. In our fatal cases there was only one which was not complicated with cholesteatoma. This fact is the more interesting, as the cases without cholesteatoma of course are very much more frequent than those with. The explanation can probably be found in the retention. Pus alone, as opposed to the cholesteatomatous masses, very seldom produces obstructing polypi. Koerner states that he has never observed necrosis of bone in cases of chronic suppuration without cholesteatoma. Cases without cholesteatoma give a favorable prognosis, as necrosis does not seem to occur even if no treatment has been undertaken.

A few words in regard to the prophylaxis. As necrosis is associated with cholesteatoma, prophylaxis of necrosis is connected with the treatment of cholesteatoma. If it is possible to prevent the putrefaction of pus, the onset of necrosis can be prevented. This can in most cases be accomplished by antiseptic treatment with the tympanic canula as devised by Hartmann and Bezold. In a few exceptional cases where continued treatment does not succeed in correcting the fœtor, the onset of retention with consecutive necrosis is to be feared. In these cases, operation is indicated. I have not observed a single case of cholesteatoma where necrosis occurred during treatment. This experience is contradicted by Schwartze, who considers the treatment of cholesteatoma with the tympanic canula to be permissible until the patient's life is suddenly threatened by the onset of acute symptoms (pain and fever). This danger, in my experience, excepting in accidents, is not great in any case of chronic non-specific purulent otitis which has been properly treated with the tympanic canula, especially if it has been possible to remove the fœtor and the patient has remained under observation. With the exception of the peculiar case of hæmophilia, the 16 fatal cases of cholesteatoma and the 7 cases from my

private practice all came to us after the onset of the acute inflammatory symptoms. Only 3 of these 23 cases had received any treatment before coming to us. One of these had been treated for 3 months with repeated removals of granulations and irrigations. The second was treated for 13 months with packing, and in the third an attempt had been made to open the antrum, the autopsy, however, showing that the operative canal led directly into the posterior cranial fossa.

We may therefore state that in chronic purulent otitis, with the exception of the tuberculous and the syphilitic, the appearance of necrosis can be prevented with certainty by proper treatment.

MANIFESTATION OF TRAUMATIC HYSTERIA IN THE ORGAN OF HEARING.

BY DR. ERNST BARTH, SENSBURG.

Translated by Dr. CARL MUND, New York.

FUNCTIONAL disturbances of hearing may constitute the only symptom of traumatic hysteria, while other organs show no hysterical stigmata whatever.

Two years ago I had the opportunity of observing a case of complete bilateral functional deafness.¹ The trauma was of a purely psychical nature—an intense fright. A girl, eleven years of age, enjoying good health and with no hereditary taint, was frightened by a dog that suddenly leaped at her in the dark. She was able to relate what had happened to her in a stammering manner. Her arms were thrown into convulsive movements and the power of speech was soon lost. After a good night's rest she was as well as ever, with the exception of complete bilateral deafness, which disappeared without treatment after eight days, when hearing again became normal. A week later, while in the darkness, she was frightened by a friend who suddenly appeared before her. This caused a recurrence of the deafness. Aside from a complete bilateral acoustic anæsthesia she presented no other symptoms characteristic of hysteria. A very interesting feature of this case was the fact that notwithstanding complete bilateral deafness, unconscious perception of musical sounds was unimpaired. After two weeks, hearing returned to normal.

¹ Barth, "Symptomatologie der hysterischen Taubheit," *Deutsche Medizinische Wochenschr.*, 1900, No. 22.

The following case of hysterical affection of the ear also presented the symptom just described: the integrity of unconscious perception of musical sounds notwithstanding complete functional deafness. In this case, however, the affection of hearing was but one of the symptoms of an absolute sensitive-sensorial hemianæsthesia.

A. K., twenty-one years old, farmhand, always healthy; grandmother on maternal side showed insanity. Parents', brothers', and sisters' history negative.

June 14, 1901, he attempted to dive, while taking instruction in swimming. He was not afraid of the water, as he had been bathing quite often in former years. However, a few hours after bathing he claims that a little blood oozed from the left ear, and that on the following day he experienced difficulty in hearing. As a result, two days later he applied for treatment.

Status Præsens.—Well built, healthy-looking man; normal temperature; heart and lungs normal; no sign of any injury to either ear; left mastoid tip markedly sensitive to pressure, but without any inflammatory changes in the integument or glands of this region. Ear canals dry, tympanic membranes quite normal, showing no sign of any recent inflammation; a minute, old cicatrix visible in posterior-inferior quadrant of left tympanic membrane. Turbinals of both sides moderately swollen; choanæ normal; pharyngeal tonsil present, but does not extend beyond the superior border of upper choanal margin.

Functional examination: whispered voice not heard on either side, ordinary voice only near right ear.

Tuning-fork not heard by bone conduction on either side; air conduction on right side only; inflation produces no change.

States that immediately after diving he had tinnitus lasting two days. Sensitiveness of the integument of left external auditory canal and left drum membrane not altered. Entire left half of body hyperæsthetic, points being described as blunt; skin and tendon reflexes (patellar, plantar, abdominal, and cremasteric) normal.

No tremor of eyelid. Complaints of pain in lower region of sternum.

While patient is quietly lying in bed, one observes frequent convulsive movements in different groups of muscles, in the right pectoralis major, and especially in the abdominal muscles during and generally at the end of expiration.

During the following days, the sensory paralysis increased, although the patient had not been exposed to any further noxious influences. After ten days, the following was found: the facial expression became apathetic to a certain degree, indicative of distraction of mind. The entire left half of the body became completely anæsthetic to all sense of feeling. While eyes are closed, no perception on slight touching or of pressure with blunt objects, or of a needle prick even when latter is driven into the tissues to a depth of several centimetres. The temperature sense is also lost. This sensory paralysis does not extend beyond the median line, sensation of the right half of the body being normal. Skin reflexes of both sides intact. The left-sided hemianæsthesia affects not only the nerves of touch, pain, and temperature, including the muscular sense, but also the higher sensory nerves. The left-sided oral, pharyngeal, laryngeal, and nasal mucous membrane is likewise insensitive to touch, besides having lost its specific sensorial power. The left half of tongue and palate is paralyzed as regards the sense of taste. Bitter, sour, and salty substances are not perceptible, while the right half of tongue and palate appears normal. The same condition holds good for the left nasal mucous membrane. Even pungent odors, ether or ammonia, held before the left nostril, excite no reflexes. These substances, however, held before the right nostril, clearly cause a sudden thrusting-away motion.

With — 1 D, R = $\frac{5}{8}$, L = $\frac{5}{8}$. Pupils, of medium width, react to light, the left one somewhat more sluggish than the right. Consensual reaction from right eye, not from left. Sensitiveness of left conjunctiva and left corneal reflex greatly reduced. Marked contraction of visual field in both eyes, left more than right. Left eye color-blind, right eye color-blind for green (green called yellow). Fundus of eyes normal.

Sensitiveness of left external ear and of left external-ear canal completely lost; the left mastoid process, however, is hyperæsthetic, the slightest touch causing patient to twitch. Sensitiveness of left drum membrane reduced.

Left ear completely deaf. Tuning-fork placed on vertex not heard in either ear, but perceived by right air conduction. On left side, neither whispered nor speech-voice heard; on right side, only words which are loudly shouted directly into the ear can be heard.

Notwithstanding this absence of hearing, the unconscious power

of hearing musical tones is retained. Even though the right ear, which still possessed some hearing power, had been rendered completely deaf by means of a plug of wax inserted into the ear canal, he nevertheless, at a given sign, would begin to sing the same keynote as struck on the piano. He would continue this correctly for five or six notes, then it became absolutely indistinct, and after this the accompaniment of a song on the piano would fail to induce him to sing correctly. The first keynote was invariably repeated in the same given pitch as often as the experiment was made.

The patient's condition remained unchanged for months. He complained of certain morbid sensations: a sensation of pressure between the eyes, extending from the root of the nose to the hairy scalp; in the left large toe, a feeling as though the toe felt wooden; in getting out of bed he noticed a stiffness in the joints of the left knee and the foot, which he always sought to overcome by means of passive motion.

Although no change had taken place in the acoustic anæsthesia described, he stated after a week that he was unable to hear at all in the open air.

All treatment was of no avail—inflation, suggestion, even hypnotism.

The effects produced by metallo-therapy were as follows: silver coins tied on left ear, no effect; a silver coin fastened and retained on right ear for two hours caused him to complain of the same sensitiveness on pressure over right mastoid process as was present over left one. This, however, ceased after a few hours on the removal of the coin.

Ten weeks after the beginning of the disease, the patient had total night blindness; immediately after sundown he was unable to find his way about and had to be led; eight months after the beginning of the disease, no change in the absolute sensitive-sensorial hemianæsthesia. The disturbance in hearing unchanged in both ears, as also the color-blindness.

The decrease in vision, however, is remarkable; he now has myopia of 3 D; the correcting glasses bring vision only to $\frac{1}{18}$ of the normal. The night-blindness remains the same.

Sensitiveness of right conjunctiva and cornea distinctly reduced, and the right eye is changeable as regards the color test.

In comparison with the severity of the disease, the relative slight trauma as a causative factor is remarkable. Inasmuch

as the patient had dived intentionally, fright cannot have played any factor, though there may have been a psychical excitement. The few drops of blood which were noticed on his left ear after a few hours very likely were the chief exciting cause to make him imagine that the hearing was impaired; the following day difficulty in hearing appeared on the side on which the slight amount of blood was found, the mastoid process of same side being extremely tender on pressure, although there was no apparent sign of a trauma or of an inflammatory process.

The following day the patient was absolutely deaf in the left ear, and had marked difficulty in hearing in the right ear; during the following days, a complete sensitive-sensorial hemianæsthesia developed on the left side of the body; notwithstanding the absolute sensory paralysis, a hyperæsthesia of the mastoid region existed. The impairment of hearing of the right ear is remarkable, though the other sensory nerves of the right half of the body show no changes. Not until months later, a hyperæsthesia seemed to develop in the right conjunctiva and cornea.

This progressive course of the disease renders the prognosis unfavorable.

ON A NEW SYMPTOM OF HEMOGLOBINURIA:
CYANOSIS AND GANGRENE OF THE
EXTERNAL EAR.

BY THE LATE DR. F. ROHRER (ZURICH).

(*With one plate from Vol. XXXIX., Zeitschrift für Ohrenheilkunde.*)

Translated by Dr. ARNOLD KNAPP.

On October 12, 1899, a man, thirty-two years old, consulted me on account of his ear. The hearing in the left ear had been diminished for six years as a result of a purulent otitis, which had healed promptly. There was occasional tinnitus in that ear. A sister of the patient also suffered from an aural affection. The patient is a well-nourished man who has suffered from acute rheumatism and gonorrhœa. He is a moderate smoker and drinker. No headache, no vertigo, no increased arterial pressure. After severe exertion and exposure to cold six weeks ago, both auricles became discolored, showing a bluish discoloration quite similar to congelation.

Both auricles show a bluish discoloration which is most prominent at the helix margin and in the region of the auricular fold. The shape of the auricle resembles the general type of the pithecus-ear. On both sides there is a supernumerary third crus antihelix in the direction of the Darwinian tubercle, as well as a reduplication of the antihelix in the upper margin of the concha.

Hearing was normal on the right side. On the left, whisper was heard in $2\frac{1}{2}m$; conversation in $5m$. Weber to the left. Rinne, left negative. Both drum membranes are diffusely clouded and retracted, especially left, with a pronounced depression about the umbo. The membrane and the malleus are movable. The Eustachian tubes are somewhat stenosed. The urine contains albumen and blood pigment. A tonic was prescribed. Rest, diet,

and warm salt baths advised. This course of treatment was followed without any result and on November 9th the patient returned. The cyanosis of the auricle was more pronounced. At the left margin of the helix in the neighborhood of the Darwinian tubercle there was superficial gangrene, 1cm in extent from the navicular fossa to the posterior margin. The gangrenous area was dark bluish-black and presented a number of punctate prolongations. Hearing for whisper $2\frac{1}{2}$ to 3m. His general condition was somewhat disturbed. The hemoglobinuria continued and the patient entered the service of Professor Eichhorst in the Medical Clinic. The subsequent course was very favorable, and at the end of January all the symptoms had disappeared, especially those of the auricle. The superficial gangrene at the margin of the helix had healed with a scarcely perceptible scar.

This symptom has not been reported in otological literature. An excellent description of hemoglobinuria is given by Senator in Eulenburg's *Encyclopædia*, vol. ix., page 437. Hemoglobinuria consists in the excretion of blood pigment in the urine with absence or occasional presence of red blood cells. The blood pigment occurs principally as methemoglobin. The urine has a red, a brownish-red, or even a black color and resembles varnish. The presence of the blood pigment is shown:

1. By the spectroscope. The lines of oxyhemoglobin between the Fraunhofer's lines D and E in yellow and green.
2. By Heller's test. Boiling with concentrated potassium hydrate.
3. By test for hemin crystals according to Reichmann — micro-chemical.
4. By guaiac test — tincture of guaiac and old turpentine oil, \overline{aa} .

Hemoglobinuria is most frequently observed after intravenous injection, intoxication, extensive burns, and severe infectious diseases. A peculiar form is the intermittent and paroxysmal variety, which was first described by Dressler in 1854. This begins with a rigor and temperature of 40°C or more, shooting pains in the back extending into the limbs, pale, followed by cyanotic discoloration of the finger tips,

feet, and ears. The causes are exposure to cold, severe muscular exertion, malaria, excesses, syphilis, and heredity. Men are more frequently affected than women. Prognosis uncertain. Hemoglobinuria occurs in various forms in animals, especially in horses. Many cases of hemoglobinuria have been reported, especially in the English and American press. I have, however, only found one observation which coincides with mine, but does not exceed it in severity or extent of symptoms. This was a case published by Wilkes in the *Medical Times and Gazette* in 1879, ii., p. 207.

A boy, sixteen years of age, suffered from a large abscess of the hip joint after an injury. Cyanosis in the face, in both cheeks, and the root of the nose set in. This was followed by a beginning gangrene at the margin of both ears, which assumed a livid color. The toes became livid and painful. All of the fingers of the right hand, and fourth and fifth of the left hand became gangrenous and mortified and were cast off. The toes and tip of the nose and the ears, which were threatened with gangrene, recovered. A defect in the margin of the ears did not occur.

These observations show that, with the appearance of lividity and cyanosis, hemoglobinuria should be suspected and an analysis of the urine be made.

REPORT OF THE MEETING OF THE AMERICAN
OTOLOGICAL SOCIETY, AT NEW LONDON,
MAY 12TH AND 13TH, 1903.

BY DR. W. S. BRYANT, NEW YORK.

Dr. CHARLES W. RICHARDSON, Washington, D.C.: Report of two **cerebral abscesses, with recovery.**

CASE 1.—Continued suppuration of the right ear, caused by scarlet fever in infancy. Radical operation. Carious bone of the aditus, mastoid, and tegmen. Convalescence rapid. A month later patient returned with slight rise of temperature and pain in the wound. Four days later wound reopened. Dura more extensively exposed, and director passed forward and upward 1cm, liberating 3cm foul pus. Rapid recovery.

CASE 2.—Boy of thirteen, with right chronic suppurative otitis media for two years. Headache for six months, and great irritability. Mastoid region not tender on deep pressure. Greater part of the membrani tympani absent. Tympanum filled with granulations. Month later, tympanum clear. Malleus and incus not carious. Treatment discontinued. About a month later, frontal pain considerable. Temperature 100° F., pulse 80. Week later patient returned home. Two days later patient had vomiting, and return of headache. Still two days later severe headache. No vomiting, slight drowsiness; pulse 60. No signs of mastoiditis. Operation, Schwartze, radical. Pus found in antrum. Dura exposed above, and a subdural abscess evacuated above the tegmen. Dura slightly thickened. No pulsation. Bulging moderate; probe passed twice slightly forward and upward, liberating no pus. A cut directly inward and upward liberated pus lying about 1cm from the surface. Convalescence, complicated by rise of temperature. The liberation of pus followed an inward thrust of the director. At another time pus was liberated by a director

passed forward and upward. Pus liberated when the dressings were changed, gradually diminishing. After evacuation of the second abscess, fluid, apparently ventricular, escaped before the pus at each dressing. This gradually diminished, but continued longer than the pus. Three days after the wound closed, pain was felt on the left side of the head, directly opposite the seat of the operation. The wound was again opened, and a director inserted 5 cm inward, which liberated two drams of ventricular fluid. Symptoms ceased and the wound closed.

Dr. HERMAN KNAPP: A case of **mastoiditis, with features of osteomyelitis; extension to the occipital bone; disseminate abscesses in the bones and under the deep muscles of the neck. Two operations without encroaching upon the tympanic structures. Complete recovery. Hearing unimpaired.** (Author's abstract.)

The patient, a frail, pale woman, thirty-four years old, in the eighth month of pregnancy, presented herself September 20, 1902, with pain in mastoid region during the last three weeks, of late accompanied by headache, nausea, and insomnia. Never has had earache nor otorrhœa. Whispering voice $\frac{3}{8}$, on both sides. Ear canal wide, membrana tympani normal, Shrapnell red and bulging. Mastoid process enlarged, dull red, hard, tender, and doughy in posterior part, the adjacent suboccipital region painful. She said she had fever at night and also chills.

Operation.—Antrum contained pus and soft granulations. Scattered through the hard mastoid there were a number of small abscesses communicating with one another by very narrow passages. Bone in tip and posterior border softer, brittle, with loose decaying particles. Curetting exposed a cavity, at the bottom of which the sigmoid sinus lay bare 3 cm in length, and above the healthy dura mater of the middle cranial fossa. This large cavity was carefully cleansed with the sharp spoon, and then plugged with iodoform gauze and absorbent cotton. No reaction until the eleventh day, when the dressing was changed. Wound in good condition; lighter dressing with sterilized gauze, to be changed daily. Temperature varied between 97.4° F. and 100° F. The operation and treatment had no influence on the pregnancy. Patient left hospital October 18th for out-door treatment. She came again October 23d, feeling well, temperature normal, but the dressing was impregnated with purulent secretion. Pressure be-

hind the head of sterno-cleido-mastoid muscle and backward and downward along the lower part of the skull brought forth a considerable quantity of greenish pus. The wound was cleaned with a sharp spoon, dusted with boric acid and iodoform, and plugged again.

Oct. 25th.—The suppuration had spread down the sterno-cleido-mastoid and among the deep muscles of the suboccipital region, which was elicited by the escape of pus and sounding with a probe, which penetrated 2.5cm down and 5.2cm backward and downward, touching rough bone along the occiput.

Oct. 27th, Second Operation.—Ether narcosis. Removal of all the rest of the mastoid. Then splitting of the deep muscles in the suboccipital area was done with a strong pair of scissors upon a grooved director. A moderate quantity of serous fluid gushed forward, followed by considerable arterial hemorrhage (from occipital artery) which, on compression, soon stopped. The probe discovered a rough and uneven surface of the occipital bone. A slice of the soft and brittle occipital bone, 5cm horizontal by 2.5cm vertical, was removed, exposing a corresponding area of the cerebellar dura mater. The next day patient was weak and feverish, no higher temperature, however, than 102.8° F. Cleansing and dressing wound daily. Patient rallied.

Oct. 29th.—Enlarging mouth of the opening of the suboccipital fistula and cutting out a piece of partially loose bone which barred the opening. From now the cavity was dressed daily and plugged with gauze, later kept open with a longer perforated silver tube, which was gradually replaced by smaller ones. The daily dressing was done by the family physician. I saw her every five or six days. The recovery was complete in December, 1902. She gave birth at the full term to a healthy baby, which she nursed herself.

May 1, 1903.—She again presented herself at my request. She was perfectly well, her baby healthy and vigorous. The operation left a clean, not very disfiguring scar, free from any annoyance. The tympanic membrane is pale, somewhat sunken, as that of the other ear. Her hearing is as it was before the disease, viz: $h = \frac{5}{24}$ ", $v = \frac{2}{30}$ '—, as in the other ear.

Duration of the disease, eight months.

Two operations: total resection of the mastoid and removal of a carious piece of the occipital bone with exposure of the cerebellar dura.

Among the *remarks*, Dr. K. states that the infection travelled through the tube, tympanum, and aditus into the mastoid; the only trace of this path was shown by redness and slight swelling of Shrapnell's membrane, though the case at first sight appeared as a primary mastoiditis.

The mastoid process was hard, swollen, with purulent foci in the antrum and in small deposits scattered through the dense vascular portion of the diploic bone between the antrum and tip; the decaying tip and posterior border of the mastoid process and the caries of the occipital bone might well suggest the diagnosis: acute osteomyelitis, yet more could not be said than that it might be correct. The case is one of a group of which the speaker has seen a certain number, almost facsimile of the case under consideration.

As to treatment, the case seemed to strengthen the correctness of those who advise to remove the whole mastoid in every purulent mastoiditis. The author would not go so far, but be conservative, *i. e.*, give free vent to the pus and remove all carious or necrosed bone.

Fistulas and recesses should be carefully explored; they get well by free vent of the secretion, but no earlier than the pyogenic factor, mostly a piece of carious bone, is removed.

Dr. E. GRUENING, New York : A case of **abscess of the right cerebellar hemisphere, with caries of the left mastoid process.**

Slowing of the pulse, drowsiness, vomiting, and rapidly developed optic neuritis were the symptoms pointing to the presence of cerebellar abscess. Both ears were affected. Acute inflammation of the right ear which rapidly subsided. Left ear more seriously affected. Mastoid cells were filled with pus and broken-down bone. For this reason the left temporo-sphenoidal lobe and the left cerebellar hemisphere were aspirated. Results negative. Post-mortem showed a large abscess of the right cerebellar hemisphere.

Abscess of the left temporo-sphenoidal lobe. Operation and recovery.

The symptoms leading to the diagnosis were rapid development of choked disk, slow pulse rate, intense headache, and vomiting. Amnesic aphasia was absent before the operation but appeared immediately after. The discharge of pus from the

abscess was followed by clear, apparently ventricular fluid. Rapid recovery.

Discussion.—Dr. DENCH mentioned a case having few symptoms pointing to cerebellar abscess. After operation, a sudden rise of temperature appeared. The patient died before a second operation could be performed. A cerebellar abscess was found on autopsy lying just below and internal to the lateral sinus.

Dr. RICHARDSON mentioned a case where the cerebellar abscess was opened, but the convalescence did not progress favorably, the patient dying. At autopsy, the abscess of the cerebellar lobe was found.

Dr. TANSLEY stated that in cerebellar abscesses the patient continually turns his eyes away from the seat of lesion.

Dr. RANDALL noticed a nystagmic tendency in those cases, which seemed usually to be toward the affected side; often the only symptom.

Dr. GRUENING prefers to use gauze where drainage is necessary.

Dr. WHITING recommends his encephaloscope in the treatment of these abscesses.

Dr. EDWARD BRADFORD DENCH: A case of **acute otitis media and sinus thrombosis. Mastoidectomy. Excision of internal jugular vein. Serous meningitis. Exploratory craniotomy. Death. Autopsy.**

Patient eight years old. Acute inflammation of right middle ear. Stiff neck. Tenderness over mastoid process. Paracentesis and irrigation did not remove the symptoms, neck becoming more stiff. Swelling below and above tip of mastoid. In a few days operation. Mastoid was opened and contained considerable pus in the tip and cells; the antrum appeared to be normal. The pus appeared to be in immediate contact with the lateral sinus. A firm clot was found occluding the sinus. Circulation was restored with curette above but not below. Jugular vein was excised from the omo-hyoid to the base of the skull. The pain continued. Convalescence favorable, but later the extremities of the wound broke down and pus was found. Pulse 42, and condition of patient bad. Child stupid. Optic neuritis both sides, slightly more marked on the right. Further examination showed field of vision normal. Catalepsy of upper and lower extremities. Operation. Opening made backward from seat of previous operation. Cerebellar dura uncovered. No pus was found. A deep incision was followed by flow of serum. The cerebellum was bulging and

the dura much congested. Profuse discharge of serum through the dressings. Hernia was removed at each dressing. Patient died on the tenth day.

Autopsy.—At least two-thirds of the right cerebellar lobe was found destroyed. Base of skull normal. Cause of death hemorrhage into spinal canal.

Dr. FRED WHITING, New York: **The differential diagnosis of acute and chronic brain abscesses by means of the encephaloscope.**

Dr. Whiting recommends the use of gauze for drainage in preference to decalcified turkey-bone used by Macewen. Dr. Whiting's encephaloscope makes possible the differentiation of acute and chronic brain abscesses. The appearance of the walls of the abscess cavity in acute purulent encephalitis is not unlike that of some space lined with delicate mucous membrane, the color of the surfaces under inspection varying from pale pink to a more pronounced reddish hue in proportion to the degree of inflammation whether of moderate or of greater severity. Upon this pinkish wall will be seen secreted here and there shreds of plastic lymph which nowhere assume the proportions of an investing layer, and punctured here and there with hemorrhagic spots of greater or less size, but one does not detect at the time of operation, or until several days later, the presence of granulations upon the walls of the abscess cavity. With chronic purulent encephalitis the picture which the encephaloscope discloses is that of dense yellow-white opaque membrane of firm consistency, completely investing walls of cavity. This capsule seldom or never presents a smooth or homogeneous surface, but is irregular, resembling a shrivelled bladder. The thickness and density of the capsule may be considerable—perhaps sufficient to prevent collapse for a time. Granulations are sometimes seen on the inner surface of the wall, or they may be absent. Bleeding is common from newly formed blood-vessels. The granulations are seen bright red, springing from the healthy brain matter. Unhealthy granulations may appear—dark blue or nearly black. The clinical value of the encephaloscope is: 1. The assistance it affords at the time of operation. 2. Its service in post-operative treatment. It shows positively whether the evacuation of the purulent contents is complete; whether there are plastic bands interfering with drainage; whether the abscess is acute or chronic, which is of great prognostic importance.

The encephaloscope is the least objectionable of the methods used to acquire this information. The introduction of the encephaloscope should be slow, thus exposing every portion of the abscess to inspection. The procedure is most simple, and when properly performed offers entirely satisfactory evidence. It is very useful not only to determine the presence of pus, but also to evacuate it when found. In post-operative treatment, the encephaloscope allows careful inspection of the abscess direct, and prevents any needless laceration of the brain abscess during the introduction of gauze. Dr. Whiting advises the least possible amount of gauze in the drainage of acute abscesses, in order to avoid distension. In chronic brain abscess the post-operative treatment is very different, and a certain amount of curetting is admissible, and extensive packing is indicated. Dr. Whiting reports three cases without encephaloscope—one recovery; five cases with encephaloscope—four recoveries.

Discussion.—Dr. DENCH believed the instrument to be of great value.

Dr. McKERNON had used the instrument in three cases and found it useful in post-operative dressings.

Dr. J. F. McKERNON: Report of two cases of **thrombosis of the sigmoid sinus presenting some symptoms differing from those usually found in this disease.** (Author's abstract.)

The first case, that of a girl sixteen years old, was admitted to the hospital with an acute otitis media with slight prolapse of the posterior-superior canal wall, and slight tenderness over the antrum. Incision of the drum was followed by a discharge of thick pus, containing an abundance of streptococci, with a few diplococci and pneumococci. Under rest and irrigation, the patient remained comfortable for two days with a temperature of 99° F., when decided mastoid symptoms developed, and the typical mastoid operation was done. The antrum and cells were filled with greenish pus, in which streptococci predominated. The sinus was not exposed, and the patient was returned to the ward in good condition. Temperature remained low until the afternoon of the next day, when it jumped from 99° to 105.6° F. in two hours, accompanied by chilly sensations. During the succeeding twenty-four hours, the temperature ranged between 105.2° and 105.8° F. Chilly sensations continued, and the girl became dull and sleepy.

The eyes were negative. Sinus involvement being now suspected, on the following day she was again operated upon, and the sinus exposed from an inch above the knee to the bulb. The dura covering the sinus was almost black, and the sinus wall between the knee and bulb collapsed. A firm, adherent clot, of yellowish-brown color, was found in the sinus, and free hemorrhage from the torcular followed its removal with the curette. Below the clot a portion of the lumen was found empty for nearly an inch, and below this again, pus, with a reddish, grumous material was discovered. The internal jugular vein was thrombosed and was accordingly exposed, ligated, and resected, together with a portion of the internal maxillary and facial veins and four infected glands. Temperature remained high (104° F.) for two days after operation, then gradually declined until the tenth day, when it reached normal. The neck wound healed by primary intention and recovery was uneventful. Streptococci were found in large numbers in the vein clots and in the infected glands.

The second case was that of a girl six years old, admitted with a purulent discharge, which contained an abundance of streptococci, from the right ear. With the exception of slight tenderness over the antrum there were no mastoid symptoms. Temperature 99.2° F. The child was put to bed, and bichloride irrigation ordered. The next day she complained at intervals of feeling cold. She remained in practically the same condition for five days, the temperature never rising above 99.8° . At the end of this period the posterior-superior canal wall sagged, the patient gave evidence of sepsis, and operation was decided upon. On opening the mastoid, only a small amount of pus was found at the tip and in the antrum, but the whole osseous structure was infiltrated and softened, and nearly all the inner table was removed. On exposing the sinus, the dura was seen to be distinctly green, both above and below the knee. On opening the sinus, a grumous material of a reddish-brown color, having incorporated with it particles of pus, oozed through the incision. The lower portion of the sinus, towards the bulb, was curetted, and dark-colored pus found. As in the previous case, the internal jugular vein was exposed and ligated, below at the clavicle and above at the bulb, and resected. The tributary veins and the glands were not involved. The neck wound healed by primary union. The resected vein for $2\frac{1}{2}$ inches below the bulb contained a soft substance, which was found to consist of pus, broken-down blood, and cellular ele-

ments. Large numbers of streptococci and a few diplococci and pneumococci were present. Recovery took place in four weeks without complication, although the temperature did not reach normal until nine days after operation.

The author calls attention to a few points of extreme interest in the onset and development of these two cases.

First, the unusual rapidity with which the mastoid and sinus involvement followed the acute otitis.

Second, that the predominating infection in both cases was due to streptococci.

Third, in both cases there was no chill, only the sensation of cold. Given the other symptoms usually present in these cases, we should not wait for a decided chill before operating, since in many cases chills have not been present at any time during the entire development of the disease.

Fourth, that in the first case there was a continuously high temperature, never falling below 105° F., which is unusual, an irregular temperature with sudden rises and falls being characteristic of a sinus complication. The temperature of the second case was also unusual, in remaining during the six days that the case was under observation at or below 99.8° F. The temperature in this case was very misleading.

DR. FRANK BULLER, Montreal: **Chronic suppurative otitis media, thrombosis of the sigmoid sinus and internal jugular.**

Operation on mastoid and sinus. Ligation of the deep jugular, followed by septic pulmonary complications. Death six days after operation.

It was a case of chronic suppuration of the left ear, with intermissions. A recurrence, followed by cessation of discharge, rigor, high temperature, and pain in the top of the head, vomiting, tenderness over the mastoid pronounced toward the tip, swelling beneath the sterno-cleido mastoid, fetid discharge. Double neuro-retinitis.

Deep jugular tied and the mastoid opened after closure of the jugular wound. A softened area led to the sinus, which contained a clot. This was removed and the sinus cleaned with formalin solution. The patient recovered well, but had a chill on the following day. Chills for several days. On the fourth day, when the dressing was removed, there was a slight odor. Some cough.

Dulness at the base of the right lung, and friction sounds at the right base. Tenth day—wound fairly healthy. On the thirteenth day, a considerable abscess had formed at the point of ligation of the jugular vein. On the twenty-first day, spasms of the right arm and hand, also of the left arm. Eyeballs were drawn strongly upward, turning to the right; soon followed by general convulsions. Patient in stupor for the next twenty-four hours—but there was no paralysis. Gradual recovery of the mental functions. On the thirty-second day, the patient had rigors, recurring daily. Cough and pains in the chest, specially of the right side. The operative wound healed slowly, but there was a cure of the original lesion, nor were there any indications of intracranial disease. On the fifty-ninth day, aspiration of the chest removed pus. The chest was opened. Patient died. No post-mortem.

Discussion.—Dr. SPRAGUE mentioned a case in which meningitis developed after a satisfactory mastoid operation. Cause not known.

Dr. BACON stated that ligation of the jugular vein did not cut off all means of infection, and that death had occurred from sepsis after the most extensive radical operations.

Dr. THOMAS R. POOLEY: A case of **mastoiditis, sinus thrombosis, pyæmia. Two operations. Recovery.**

Patient taken ill with grippe. Had spontaneous rupture of the drum membrane. Had marked pain and tenderness, distinct redness and swelling in the mastoid region. Streptococci found in discharge. Patient's appearance showed profound infection. Schwartze incision was made. The outer table was found softened. Sinus was opened in its abnormally forward course. The ascending portion of the sinus was exposed for nearly its entire length. The wound found sloughy on the fifth day. On seventh day, patient complained of pain from tonsillitis and headache, and there was distinct redness and tenderness in the course of the jugular vein. On the eighth day, painful arthritis in the middle finger of the left hand developed, and the wound was gangrenous. Temperature 103° F. On the ninth day, pulse 120. Later, severe chill. Temperature rising. Pulse 130; respiration 36. Choked disk in both eyes. Diagnosis of septic thrombosis. Operation next day. The original wound was opened and the sinus exposed still farther. It was slit open and found filled with a fibrous clot. Lower down there was a disorganized clot.

Circulation was restored by forcible manipulation and curetting of the jugular vein. The patient being almost moribund, it was thought best not to open the neck farther. Symptoms of infection continued. Various signs of localized metastatic infection appeared. Gradual recovery. A sequestrum formed on the exposed bone on the eighty-third day, and more sequestra appeared later.

Dr. H. O. REIK, Baltimore: **The effects of increased intratympanic pressure. A possible explanation of tinnitus aurium.** (Author's abstract.)

Dr. Reik called attention to the paper which he presented before the American Otological Society, at its last annual meeting, setting forth some physiological experiments to show the cardiac and vascular effects of operations upon the middle ear. These experiments tended to show that operations upon the membrane or ossicles always produced a depressive effect, and that the lowering of blood pressure and pulse rate was in direct proportion to the amount of traumatism. This fall of blood pressure immediately following injury to the tympanum was shown to be due to disturbance of the vasomotor apparatus and to account in a satisfactory way for the cardiac depression that so often accompanies operations upon the middle ear,—phenomena that had been erroneously attributed to disturbed equilibrium due to increased intralabyrinthine pressure.

Dr. Reik presented some new physiological work to show the effect of increased intratympanic pressure as measured by changes in the pulse rate and blood pressure. Dogs were used for the experiment, the blood pressure and pulse recorded by the kymographion and the intratympanic pressure measured accurately by a mercury manometer. It was found that even a slight pressure of fluid in the tympanum caused a depressor effect, and that the extent of fall in the blood pressure and pulse rate and also the duration of this effect were in direct proportion to the amount of pressure exerted upon the fluid in the tympanum.

Attention was called to the old theory that tinnitus aurium constituted an appreciation of sounds attending the circulation, and argument was adduced to show that these sounds might be due to the changes in the circulation produced by disturbances in the vasomotor apparatus. The hypothesis is an old one, but heretofore no positive evidence has been submitted to substantiate it.

Dr. Reik's experiments seem to show that changes in the calibre of the blood-vessels of the tympanum or labyrinth do occur as the result of even slight irritation of the tympanic membrane, or within the middle ear.

Dr. GORHAM BACON, New York: A case of **double acute mastoiditis followed by sinus thrombosis and other complications; operation; recovery.** (Author's abstract.)

The patient, Clara K., married, twenty-four years old, was admitted to the N. Y. Eye and Ear Infirmary on April 2, 1901. One week ago, she had an earache (left side) following an attack of grippe. She had violent pain with tinnitus, and two days later the right ear began to pain her more severely than the left one. On the following day the ear began to discharge, and later the same occurred on the left side.

When examined on admission, there was a profuse discharge from each ear, with bulging of both drumheads and mastoid inflammation, requiring immediate operation. For several days she has been very deaf, has suffered from nausea and vertigo, and recently has vomited. She denies having had any fever or chills. The tenderness on pressure was more marked on the right than on the left mastoid process. Temperature $99\frac{1}{2}^{\circ}$ F.; pulse 102.

The operation was performed immediately and as rapidly as possible, owing to the fact that she expected to be confined in about six weeks. The right mastoid process was opened first and pus and necrosed bone were removed. The left mastoid was then opened and found to be in a similar condition, although the disease was not so severe on this side. The pus from the right side showed marked streptococcus infection. No streptococci found on the left side. The entire cellular structures were removed on both sides and the wounds dressed in the usual way.

The patient did very well until three days later, when she had a severe chill, followed by a temperature of 106.5° F. (rectal) and sweating. She was nauseated and vomited. There was no tenderness along the course of the internal jugular vein on either side.

The right sigmoid sinus was opened and a firm clot removed. The blood current was re-established from the upper end but not from the lower or bulbar end. The internal jugular vein was not ligated. Under the microscope the clot contained streptococci.

The patient's condition was good and she was removed to the ward. An hour later she had a chill and temperature of 105° F.,

followed by sweating. The temperature gradually fell to 101° F. at midnight. The next day the temperature was $99\frac{1}{2}^{\circ}$ F. in the morning, and $101\frac{3}{8}^{\circ}$ F. in the evening. Three days later the temperature was normal. On April 15th, at 10.45 A.M., an eight-month child was born after thirteen hours of labor. All went well until April 20th, when she developed a temperature of 103° F. This was due to an abscess in the right gluteal region, which was opened and the temperature again became normal. Later an abscess formed in the left gluteal region and caused a rise in temperature again. The pus in each abscess contained staphylococci. There were no further complications after this and the patient and child left the Infirmary in excellent condition on May 27, 1901.

The case was reported on account of the unusual complications. In the first place, the patient's condition was such that the operation had to be performed as rapidly as possible. When the patient developed sinus thrombosis, there was difficulty in deciding as to whether to operate on one or both sigmoid sinuses. As the right ear alone showed the presence of the streptococcus, it was deemed best to open the right one first and then wait for further symptoms. The second chill seemed to be due to septic absorption, which had already occurred, and not to involvement of the left sinus.

The internal jugular vein was not excised, because the writer does not consider it good surgery to ligate the vein in recent cases, especially when the clot has not broken down and there is no tenderness along the course of the internal jugular vein. He prefers to wait twenty-four hours before ligating the vein, even when the blood current has not been re-established from the bulbar end. For the successful result in this case, the writer is indebted to the skill and judgment shown by the House Surgeon, Dr. J. D. Richards.

Dr. B. ALEX. RANDALL, Philadelphia: **A study of the surgical relations of the facial canal in five hundred crania.** (Author's abstract.)

Dr. Randall expanded a preliminary paper published in the ARCHIVES OF OTOLGY and presented the results of measurements of 500 skulls as to the vertical course of the descending portion of the facial canal. This was found in sixty per cent. of all cases, irrespective of age, cranial index, asymmetry of the jugular bulb,

or inclination of the axis of the external meatus. Outward course of the facial was present in one juvenile skull to the extent of 10° and to trivial degrees in a small percentage, while an inward deviation from 5° to 15° was twice as common. Symmetry, of course, was almost invariable, and an apparently outward course was at times due to the encroaching of the paramastoid process upon the stylo-mastoid exit. The facial canal was in no case found to be less than 2 or more than 4mm back of the middle of the back margin of the annulus, and in every case the lower edge of the annulus lay 3 to 4mm internal to the corresponding level of the facial canal.

DR. GEORGE B. McAULIFFE: A few aural suggestions.

Removal of exostoses of the external auditory canal is generally accomplished by chisel and mallet, with disengagement of the auricle from the bone. I removed several by means of a hook caught behind the growths. Occluding exostoses, although not always manifestly pedunculated, are capable of some motion, and after their removal show that they are not, after all, sessile. I was induced to try this by the hurry of one patient, and by the occurrence of an epileptic fit at the outset of anæsthesia in a patient on whom the chisel, mallet, and laying forward of the auricle were to be employed. It is a minor surgical procedure practically painless.

The cutting away of the external wall of the aditus is the most delicate step in the tympano-mastoid exenteration. Randall's method is good. I have used Gigli's wire saw to cut away the bridge of bone.

Post-mastoidectomy temperature is septic, owing to neglected foci in zygomatic, tip, or occipital cells or absorption during operation. The most radical operations are generally most afebrile. To effect afebrility, all blood clots must be removed, after all septic cells are removed, and the wound flushed with hydrozone and alcohol. Into the dry wound the primary dressing may be retained as long as eight or ten days without symptoms.

Earaches generally occur at night, because dorsal decubitus upsets the best aural circulatory balance, and because the pharyngeal orifice of the tube, which lies an inch below the tympanum in the erect posture, and therefore has gravity to aid its protection of the middle ear, lies above the tympanic in the reclining position. Best position, then, for the aural inflammation is the semi-

reclining, with the helix of the affected ear uppermost to get downward and forward drainage.

Javanese method of pressure on the carotids is useful to induce anæmia of the brain and cause an absence of perception of the sensorium of peripheral sensation. The feeling when the method is rightly used is similar to aconitia, followed by loss of motion and pain. Transitory as it is, one can cut the drum before the patient is aware of it. Adventitious bands are often found binding the median cartilaginous plate of the Eustachian tube to the pharynx. Their removal often relieves the tinnitus and deafness more than any one procedure. The finger passed down the fossa of Rosenmüller accomplishes their removal.

Discussion.—Dr. RANDALL suggests that children with earache should go to bed with flannel night-caps, and that cases of eruptive fevers should wear night-caps by day and night as a prophylactic and therapeutic measure.

Dr. WM. SOHIER BRYANT, New York: Report of case of **fibroma of the external auditory canal, with serious reflex symptoms.**

The tumor was cylindrical, lying subcutaneously, and was keloid in character. Nervous symptoms were attributable to outward displacement of the drum membrane due to absorption of air in the auditory canal.

Dr. FREDERICK L. JACK, Boston, Mass.: **A mastoid and auricle retractor.**

Dr. Jack exhibited a self-retaining retractor for holding the two edges of the wound apart, with adjustable plate to hold the auricle out of the way.

REPORT OF THE TRANSACTIONS OF THE SECTION ON OTOTOLOGY OF THE NEW YORK ACADEMY OF MEDICINE.

MEETING OF OCTOBER 10, 1903. THE PRESIDENT, E. B. DENCH, M.D., IN THE CHAIR.

Dr. ARNOLD KNAPP presented a case of **exostoses** in the depth of both **auditory canals** complicated by **chronic purulent otitis** on one side, which had necessitated the **radical operation**, in a man twenty-nine years of age. The purulent otitis was of nine months' duration; the patient suffered from headache and nausea, and was unable to work. The exostoses were situated on the anterior and posterior walls of the auditory canals in the extreme depth; the lumen was contracted to a narrow vertical chink, which, in the right ear, was filled with pus. Hearing $R = \frac{2}{80}$, $L = n$.

Operation, January 14, 1903.—The auricle and the membranous canal were retracted, exposing the exostoses. These were removed, and were found to be in contact with the drum membrane.

The lower half of the drum membrane was destroyed. There were granulations in the middle ear. It was decided to do the radical operation for fear of not being able to prevent a stenosis of the canal. The antrum was found practically normal. The lower and posterior recesses of the tympanum were filled with granulations. The body of the incus was carious; hammer normal; Koerner's plastic; immediate skin graft. The subsequent healing was rapid. The graft had taken so that after the first dressing no further introduction of gauze was found necessary. The ear, however, was not completely dry until ten weeks after the operation, owing to granulations and moisture at the inner extremity of the anterior meatal wall. When last seen, on September 17th, the hearing was $\frac{1}{2}0$.

Two points in the case are of interest:

First.—Confirming the obstinacy and length of treatment incurred by necrosis or any lesion of the anterior meatal wall after radical operation.

Second.—That good hearing is possible after the radical operation, and that diminution in hearing depends on the extent of the suppurating process rather than on the operation.

Discussion.—Dr. WENDELL C. PHILLIPS said that he had recently operated upon a similar case. The patient, a man fifty years of age, had had a chronic suppuration for many years. There was also a large exostosis of the posterior wall of the canal which filled more than two-thirds of the lumen. The patient was beginning to complain of pressure symptoms. He had advised the removal of the exostosis and a Stacke operation to be done at the same time, to which the patient consented. After complete operation a large skin graft was introduced and the posterior wound closed. The patient made a favorable recovery. In this case, however, inasmuch as the ossicles had evidently been destroyed for some time and there was no hearing previous to the operation, the subsequent hearing was not improved.

Dr. T. J. HARRIS presented a case of **hemorrhage into the labyrinth**, in a machinist sixty-five years of age, who, upon the ninth day of August, was working upon the new Brooklyn Bridge. He fell a number of feet, striking his head upon the iron platform below him. In addition to severe contusions of the shoulder and other parts of the body, he sustained a fracture of the base of the skull. When he became conscious it was discovered that he had become totally deaf, as he has remained ever since.

There appeared to be no response to all tests in the left ear; in the right ear there was very slight response. The shouted voice employing double numerals could be heard at six inches, and in almost every key there was response to the Galton whistle. He heard the C fork 128 v. for six seconds by aerial conduction, and eight seconds by bone conduction. The tubes were well open. Escape of cerebro-spinal fluid had taken place from the ears, at time of accident, but no lesion of the drum membranes could now be discovered. In addition to the loss of hearing, there were profound vertigo and a good deal of tinnitus. He had four injections of $\frac{1}{4}$ gr. pilocarpin, which had produced physiological effects, and iodide of potash, 50 minims of saturated solution three times a day, with no noticeable change in hearing, but an improvement in the

vertigo. He was also being treated with galvanic current behind both mastoids.

The speaker said that Politzer had reported a number of cases where fracture of the skull existed, and where as a result there had been some internal ear lesion, in a few cases with recovery as far as life was concerned, but rarely with any improvement of hearing.

Discussion.—Dr. C. M. COAKLEY had seen a case with somewhat similar history. A man riding on a truck was thrown backward to the ground, receiving a badly depressed fracture of the skull. He recovered from the wound, but could not hear ordinary sounds; was not totally deaf in either ear. Was put on pilocarpin without benefit. When last seen, in June, complained of tinnitus and dizziness, although the latter trouble was better than it had been.

There had been paralysis of the left facial nerve, which had cleared up before the speaker had seen the patient.

Dr. PHILLIPS said that in his experience the vertigo and tinnitus gradually subsided, but as a general rule there was not very much improvement in the hearing.

Dr. JAMES F. MCKERNON related the history of a man who received a fracture of the base of the skull (left side) while automobiling, by coming in contact with a trolley car. When seen, four days after the accident, a small amount of cerebro-spinal fluid was issuing from both ears. There was a fracture of the palate process of the superior maxilla on the left side. There was also slight facial disturbance on the same side. Two days later, making six days from the time of the accident, he regained consciousness and was put upon pilocarpin hypodermically three times a day, and nitrate of strychnia was also administered. Two weeks from the time of the accident, the hearing was absolutely nil on both sides. Ten days afterward, he could hear the Galton whistle on the right side, but not on the left. The lower tones were entirely absent. Two weeks later, he could hear the Galton whistle on both sides and the 256 fork on the right side.

This treatment was continued for eleven weeks, when the hearing on the left side was four feet for the whisper, and on the right side over fourteen feet. About a year afterward he had entirely recovered his hearing on the right side, and he heard about one-third the normal distance on the left side. Vertigo, which was present, entirely disappeared at the end of the fourth week.

The speaker said he believed that pilocarpin should be given

up to the physiological limit, and over a long period of time in these cases.

The CHAIRMAN, DR. EDWARD B. DENCH, had seen but few such cases. His single experience with fracture of the base of the skull made him agree with Dr. McKernon, that pilocarpin should be given a long time and to the physiological limit, in order to get good results.

In other cases, where there had undoubtedly been hemorrhage into the labyrinth, fairly good results had been attained in his practice by the administration of pilocarpin.

The paper of the evening, **clinical experiences with the enlarged pharyngeal tonsil**, was then read by the author, HENRY GRADLE, M.D., Chicago, Ill. (See page 422 of this issue.)

Discussion.—Dr. W. F. CHAPPELL said that he would review Dr. Gradle's paper from the standpoint of the rhinologist rather than of the otologist. He thought there was much to be learned about the pharyngeal tonsil, especially regarding the lymphoid tissue as a source of entrance of infection to the general system. He thought that children with unhealthy lymphoid tissue in the naso-pharynx or fauces were more liable to contract diphtheria, influenza, scarlet fever, measles, and whooping-cough than those with a healthy naso-pharynx.

As to pharyngeal hypertrophies, we may have multiple large and small hypertrophies. In one case, drawings of the faucial and pharyngeal tonsils were shown; it was very hard from the size and shape to distinguish between them. Another case of exceedingly large hypertrophy had been presented in Dr. Holt's book. In both cases the growths were apparent below the soft palate. The child, whose faucial and pharyngeal tonsils were reported, weighed twenty pounds when operated upon. Three months later the weight was thirty-four pounds, a gain of fourteen pounds in three months.

In regard to diagnosis of adenoids, three conditions might lead specialists astray: one, a wide naso-pharynx in a large, healthy child, which might contain considerable adenoid tissue without giving evidence of diseased naso-pharynx, and yet present other symptoms. For instance, a boy of ten months when crying began to catch his breath. A little later, he developed severe laryngeal spasms, became cyanosed and unconscious for an appreciable time. A large adenoid was removed, and during the

operation a severe spasm of the larynx occurred. He recovered without further symptoms.

In certain children and young adults, in place of the ordinary large lymphoid mass or masses, one might have a sheet of lymphoid tissue covering the vault of the naso-pharynx. At times this would be perfectly quiet and in apposition with the surrounding tissues; at other times, swell and more or less completely fill the naso-pharynx. Dr. Delavan called attention to this some years ago.

Dr. Chappell said that it was impossible in very young infants to introduce the index finger into the naso-pharynx. They had many symptoms simulating adenoids, making diagnosis difficult. In some cases it was indigestion or curds of milk in the pharynx, or a large tubercle of the process of the atlas might be mistaken for adenoids.

As regards treatment, the speaker believed that, if there was but little adenoid tissue, it would disappear if the child could be placed permanently in a suitable climate, but as a rule these growths called for operation.

As to operation, each man had his favorite instruments, table, anæsthetics, etc. He had used Dr. Gradle's instrument. When the lymphoid masses were large and in a central line, it was very satisfactory.

He thought it very important to take temperature before and after performing adenectomy in children as well as in adults, and in private practice he thought it well to examine the urine. On two occasions had deferred operation on account of albumen in the urine, and within four days both children had scarlet fever. Had watched a child of five months for a few days after operation, and found that it had a temperature of 106° . Had the blood examined and found the plasmodium malarie. Another case developed temperature after the operation, and it was the first symptom which preceded a rapid tubercular infection.

As to results—he thought them most excellent from operations on the naso-pharynx. It was in some rare cases difficult to use instruments in the naso-pharynx, and sometimes small pieces of tissue were left. If the voice was much impaired it would be well, in his opinion, to explain to the parents that the child might require vocal lessons before the voice would be restored. It was also well to examine the nose. There might be posterior hypertrophy, polypi, or deflected septum.

The speaker hoped that others would study the subject of lymphoid tissue as a portal of infection to the general system.

Dr. MCKERNON said deafness often resulted from tubal catarrh, and was many times caused by the impairment of the venous circulation around the cartilaginous portion of the Eustachian tube, due to the presence of lymphoid hypertrophy some distance away from the tubal opening, in contradistinction to its being directly over the tube, as many authorities state.

Congenital pharyngeal hypertrophies were found in fifteen out of forty-three cases in children under two months old, and in these cases the hypertrophy was found in the vault and well developed. He had seen lymphoid tissue well developed in two or three cases three weeks old, which he had removed with the finger to allow the child to breathe.

He had seen only four out of thirty cases during the past five years, where lymphoid tissue was present in cases of cleft palate.

The speaker had seen cases of reflex cough without bronchitis, cold, or coryza. On lying down the patients coughed. He had examined the naso-pharynx, and found lymphoid hypertrophy. On its removal the cough disappeared.

Dr. MCKERNON thought it best in cases of adenoids during an acute otitis, to wait until the otitis diminished before removing the adenoids, then operate under complete anæsthesia of nitrous oxid gas or nitrous oxid combined with ether.

Recurrence of lymphoid hypertrophy of the pharyngeal vault did take place, to the writer's knowledge. One case reported by Dr. Hopkins, had been operated on five times, and the vault left completely clean each time. He thought one cause of recurrence might have been lack of nasal respiration.

The instruments preferred by Dr. McKernon were the Brandegee forceps and the Gottstein or modified Gottstein curette.

Dr. COAKLEY thought the symptoms produced by adenoids were not entirely due to the presence of the growth in the naso-pharynx. It was well to contract the closed passages with cocain to see whether there was inflammation, thickening, or some growth that might remain and cause obstruction after the removal of the adenoid tissue.

As to diagnosis, he relied upon facial expression, history of mouth-breathing, snoring at night, and the presence of the thick, gelatinous discharge coming down when examining the fauces,

rather than the mirror, or passing the finger up behind the soft palate, which hurt and frightened the child.

In children two to five months old, he put a small curette in the naso-pharynx, going through the motions as if there were adenoids: if found, the operation was ended; if not, there was a faulty formation of the vault of the naso-pharynx which interfered with respiration.

As to instruments, he thought better results could be attained by the use of forceps and the curette afterward. He used Dr. Brandegee's forceps and Löwenberg's curette, under an anæsthetic. He thought Dr. Gradle's instrument might not include all the adenoid tissue, though it made a clean cut.

Dr. PHILLIPS considered the method of examination as of great importance, and for two reasons advised the use of the tongue depressor and mirror: first, because it did not antagonize the child; and secondly, the location and extent of the growth could be better defined. With care he rarely failed to get a satisfactory examination by this method, even in quite young children. He considered it quite possible to make a satisfactory diagnosis from the clinical history, facial appearance, hypertrophied tonsils, and the presence of follicular growths on the posterior walls of the pharynx, and he often operated without further examination.

As to the actual location of adenoids in Rosenmüller's fossa, he had rarely seen them there, although the overhanging masses would seem to be in that location. He did not think that any ear complication resulted from direct pressure upon the Eustachian tube. A large number of his adenoid operations came from patients who first presented themselves, owing to recurring suppuration of the middle ear. There could be no doubt that adenoids exercised a considerable influence upon general nutrition, as might be instanced by the rapid increase in weight after operation. The most marked instance of this kind which had come under his observation was in a boy of fourteen years of age, of stunted growth, who had enormous adenoid development, together with large faucial tonsils and a badly deflected septum as well. After successful operation upon these, the boy gained forty pounds in one year. Of late Dr. Phillips had taken the weight of all adenoid patients previous to operation, so that comparisons might be made. He has also made it a rule to make a rhinoscopic examination some time after the operation,—a procedure which he strongly recommended.

As to instrumentation, he did not believe that any operation without an anæsthetic could always be done thoroughly, no matter what instrument should be used. He had seen Dr. Gradle's instrument some years ago in Chicago. It seemed to present some strong points. The Brandegee forceps, however, had proved so successful in his hands, together with the Gottstein curette, that he should be loath to use any other. With these instruments a complete operation could be accomplished (under an anæsthetic) in a few seconds. The temperature, of course, should be taken before the operation.

Dr. C. E. MUNGER had used Dr. Gradle's instruments for the past two years, and had operated with them one hundred and eighty-five times on adults and small children. He thought they brought out adenoids in their entirety as did no other instrument. The instrument, as made at present, broke easily when sterilized under steam, and should be made stronger. It was used more easily on adults, who co-operated with the operator.

Dr. D. J. McDONALD said that for five years he had given bromid of ethyl as an anæsthetic in adenoid operations over seven hundred times without a death. It was not necessary to have an expert anæsthetizer. An operation could be done in forty seconds under bromid of ethyl.

Dr. BRANDEGEE asked Dr. Gradle whether it was his rule to rely solely upon the instrument shown, without Gottstein's curette, or other instrument.

Dr. GRADLE, in closing the discussion of his paper, said, in response to Dr. Brandegee's question as to the use of Gottstein's curette, that he had practically ceased using it since he relied upon the instrument shown. He had formerly used it, but as by the use of his instrument adenoids could be removed in their entirety he did not consider further procedure necessary.

As to congenital condition, he had not seen it except in very young babies. He had watched the mode of production, and found it to be, distinctly, a form of inflammatory hypertrophy. This had led him to infer that it could not have been congenital or it would have had a different etiology, as a coryza could not occur before birth, but could within the first few weeks of life.

In babies under eight months old, he used a small Hartmann curette for diagnostic purposes, doing what was necessary at the same time. In children one or two years old, he used his own smallest pattern. He considered removal by forceps a cruel

operation. Older children had told him that his operation gave them very little pain when cocain had been used freely.

He knew of no reliable statistics as to ethyl or bromid of ethyl. Hinkle found eighteen deaths in American and English literature, 1892-1898, a proportion appallingly large.

As to hemorrhage, he had discovered that it came from tags. By the use of his instrument, no tags were left, consequently no hemorrhages occurred.

He thought the use of the thermometer wise, but operated under disturbance of temperature rather than defer operation until it became still higher.

REPORT ON THE PROGRESS OF OTOTOLOGY DURING THE FIRST QUARTER OF THE YEAR 1903.

BY DR. ARTHUR HARTMANN.

Translated by Dr. ARNOLD KNAPP.

(Continued from page 411.)

GENERAL.

a.—REPORTS AND GENERAL COMMUNICATIONS.

17. **Schmiegelow.** Reports from the oto-laryngological department of the St. Joseph's Hospital, 1902, Copenhagen.

18. **Pick.** Clinical contributions to otology. *Wien. klin. Rundschau*, 1902, No. 32.

19. **New York Eye and Ear Infirmary.** Eighty-second annual report for the year ending Sept. 30, 1902. Aural surgeons: Bacon, Dench, Adams, Whiting, McKernon, and Lewis, Jr.

20. **Manhattan Eye and Ear Hospital.** Thirty-third annual report for the year ending Sept. 30, 1902. Aural surgeons: Webster, Emerson, Lewis, Hepburn, Clemens, Phillips, Berens, Duel.

21. **New York Ophthalmic and Aural Institute.** Thirty-third annual report for the year ending Sept. 30, 1902. Aural surgeons: H. Knapp, A. Knapp, R. Jordan, J. A. Jackson, C. Mund, J. Wolff.

17. 163 patients were treated during the year. Of these, 7 died; 156 operations were performed, of which 20 were simple mastoid operations and 35 radical operations. A review of the treatment in middle-ear suppuration is added. In acute purulent otitis the patients are advised to stay in bed. Of the unusual cases, one is mentioned where the simple operation on the mastoid process revealed a large epidural abscess which had given no symptoms. Another case is described where a carious process in the mastoid continued, though the otitis media was cured. In

chronic suppuration the simple operation was performed 12 times. In the other operations the radical operation was done. In 63 % of the cases of the radical operation, complete healing took place. As regards the healing both before and after the radical operation, 17 cases are quoted, of which in 10 the hearing was improved after the operation, in 3 it was unchanged, and in 4 it was diminished.

MÖLLER.

18. (1) A case of objective perceptible tinnitus due to chorea pharyngis.

A noise was perceived with aid of the auscultation tube at irregular intervals up to 100 times a minute. The cause was chorea-like clonic contractions of the pharyngeal muscles, especially of the soft palate and the Eustachian tubes. The disease is supposed to be the result of extensive changes in the nose and the naso-pharynx.

(2) Spontaneous cure of a chronic purulent otitis media, as after the radical operation.

Removal of a sequestrum with the forceps, representing almost the entire posterior bony auditory wall.

(3) A cyst within the tympanum. A bluish-red soft tumor as large as a bean, in the tympanum. Puncture revealed a small quantity of slightly clouded, yellowish-brown, serous fluid, which contained cholestearin crystals, red blood corpuscles, and cells filled with fat granules.

WANNER.

19. Number of ear patients, 10,235; throat patients, 9607; ear operations, 1674; paracentesis of membrana tympani, 490; ossiculectomy, 34; mastoidectomy, 219; Schwartze-Stacke, 37; cerebral abscess, 4; epidural abscess, 36; sigmoid sinus thrombosis, 6; thrombosis of internal jugular, 6; removal of granulations and polypi, 62.

CLEMENS.

20. Number of ear patients, 4044; throat patients, 3460; ear operations, 1379; paracentesis of membrana tympani, 35; ossiculectomy, 6; mastoidectomy, 111; cerebral abscess, 2; thrombosis of lateral sinus, 2; thrombosis of internal jugular, 2; radical operation, 9; removal of granulations and polypi, 36.

CLEMENS.

21. Number of ear patients, 3638; mastoidectomy, 33; radical operation, 23; ossiculectomy, 10; paracentesis, 149; aural polypi, 18; nasal polypi, 56; removal of adenoids, 710; ligation of internal jugular, 1.

CLEMENS.

b.—GENERAL PATHOLOGY AND SYMPTOMATOLOGY.

22. **Buhe.** Two unusual anatomical conditions in the temporal bone :
1. after facial paralysis of thirty-five years' standing ; 2. defect of the bulb of the jugular vein and of the sigmoid sinus. *A. f. O.*, vol. lvii., p. 101.
23. **Sugar.** On otitis after measles, and its prophylactic treatment. *Klinisch-therapeutische Wochenschrift*, 1903, No. 1.
24. **Stenger.** On the value of otitic symptoms for the diagnosis of head injuries. *Berl. klin. Wochenschr.*, 1903, No. 5.
25. **Alexander and Reko.** The province of the rhodan reaction of the saliva in ear diseases. *Wiener Klin. Wochenschr.*, 1902, No. 42.
26. **Alt.** Disturbances of musical hearing. *Wiener klin. Wochenschrift*, 1902, No. 30 and No. 31.
27. **Randall.** Some notes on aural vertigo. *Journal American Medical Association*, February 28, 1903.
28. **Amberg.** A case of diplacusis monauralis. *Journal American Medical Association*, January 24, 1903.

22. (1) The specimen was that of a person thirty-five years of age who had suffered from a complete facial paralysis following a middle-ear suppuration when six months old. It is stated that during the suppuration small pieces of bone were frequently discharged from the ear.

The main trunk of the facial nerve does not pass from the geniculate ganglion in its usual path peripherically, but passes directly through the tympanum filled in with porous bone, terminating in the external tympanic wall above and in front of the drum. A thin nerve passes on in the facial canal and joins below the second knee the peripheric main part of the nerve, which also terminates blindly in the bone a little above the junction. The bone fragments which were cast off had evidently produced a complete rupture of the facial nerve.

(2) The sigmoid sinus as well as the sigmoid sulcus are absent from the very well developed mastoid emissary downwards, and including the bulb of the jugular vein. In place of the sinus, the dura mater is slightly thickened. The internal jugular vein, which is only one-quarter as broad as normal, can be followed to the apex of the petrous pyramid. The middle ear is intact. As there are no signs of any middle-ear suppuration, especially no scar formation in the region of the jugular vein, this case cannot be considered as the result of an old sinus thrombosis, but is principally a congenital deformity. HAENEL.

23. This is a compilation of what is known in literature on the otitis of measles. The author recommends as a prophylactic

measure against this otitis the instillation of nitrate of silver solution in the nose, as proposed by Weiss. The latter author found among the cases thus treated 6.6 % cases of otitis media. SUGAR found among 60 cases, 4 % of otitis, while of 111 cases of measles of the same epidemic which were not treated in this manner the result showed 18 cases of aural complications.

WANNER.

24. In many cases of so-called traumatic neurosis, the author found subjective and objective symptoms referable to an involvement of the ear. If in these cases the functional examination of the ear reveals that in addition to the psychic disturbance a disease of the ear is really present, the question of whether disease or simulation exists is solved, and an important point for the character and severity of the head injury is given. It is not proper in these cases to speak of a purely traumatic neurosis, but better of a traumatic neurosis on the basis of disease of the ear.

MÜLLER.

25. Induced by the opposite views of Muck and Jürgens, eighty-five cases of ear disease were examined (especially chronic and acute middle-ear suppuration) with the ferric chloride reaction. The saliva irrespective of the side of the ear trouble was examined. They found that in diseases of the external ear and of the parotid the rhodan reaction in the saliva was not influenced, while in acute middle-ear inflammation the quantity of rhodan was reduced. They conclude as follows:

(1) The rhodan reaction in the saliva is of diagnostic importance in the presence of ear disease, as absence or traces of rhodan speak for a middle-ear disease.

(2) Directly after the radical operation, the quantity of rhodan is diminished. The reaction returns usually in the fourth week after the operation, and denotes an uncomplicated course of healing.

(3) Bilateral destruction of the tympanic structures may lead to a permanent diminution of rhodan.

(4) The rhodan reaction has not a general prognostic value in ear diseases.

WANNER.

26. After describing 7 cases of his own as well as a careful compilation of those found in literature, ALT reviews the various theories on the origin of diplacusis—binauralis, echotica, and monauralis. To determine experimentally to what degree

interference with sound-conduction produces a disturbance of musical hearing, the air was aspirated from the middle ear and the tube by means of the catheter, and in later cases by means of Siegle's speculum. König's tuning-forks, with electro-magnetic percussion, were employed. If the stand to which a tuning-fork of 35 vibrations was attached was placed on the mastoid process, on applying Siegle's speculum and compressing the air the tone perception for the fundamental tone was immediately lost, and in some cases a veritable overtone was perceived. If the apparatus was placed on the forehead and the air compressed in both ear canals, the fundamental tone was lost on the slightest pressure. On increased pressure the overtones were lost, and a tuning-fork of 64 vibrations produced overtones, but one with 128 produced overtones but rarely. Additional experiments were made with a simultaneous use of two tuning-forks, of which one had 32 vibrations and the other 256, or 64 and 32. On the action of the air pressure on the drum, the perception of the low tones was easily overcome. The experiments with pipes of various pitch were not as striking.

According to Alt, the increased labyrinth pressure alone is responsible for interfering with the perception of the deep tones, as on increase of the pressure the overtones also disappear, and the ear becomes deaf.

Alt believes he has found a confirmation of Zimmermann's theory in his experiments.

That in middle-ear disease the fundamental tone is not at all or only weakly transmitted, has been shown from the result of an experiment on a piano. Instead of the loud fundamental tone with the feeble overtones, one only hears the overtones which are consonant or dissonant according to the intervals. Hearing of a higher pitch is thus explained. Hearing of a lower pitch is due to the fact that on judging the pitch with a very feeble overtone one is apt to make an error of one or more octaves, so that even a practised musician may regard such an overtone as an undertone. On the other hand, variations of pressure within the labyrinth may produce a tension of the perceiving apparatus which would lead to deep hearing. False hearing may come: first, when the other ear was previously but little suited to hearing; second, when the disturbance of the clang tint produces in sensitive musicians diplacusis; and, third, when a middle-ear affection is complicated with labyrinth disease.

Alt believes the middle-ear disease has a great deal to do with false hearing, as the latter has been described ten times more frequently in diseases of the middle ear than in those of the labyrinth. Diplacusis monauralis he regards as a nervous symptom of neurasthenics.

WANNER.

27. RANDALL has found that in the great majority of cases of aural vertigo seen by him neurotic and general vasomotor influences have seemed largely at fault for the symptom, except in the group where the catarrhal affection of the Eustachian tubes and tympanum was so clearly at fault that treatment by the catheter directed to this condition could be fairly expected to give the relief which was obtained. All cases of vertigo coming to the otologist should encourage minute methods of study as to the tympanic and labyrinthine condition, and an investigation, personally or through the aid of a judicious physician, of all the general aspects of the patient's case. He should exclude or relieve all involvements of the accessory nasal cavities, investigate the refraction and muscular conditions of the eyes, and, abating nothing of the local treatment by inflation and massage which the aural condition may seem to demand, use strychnia and other tonics according to the general needs of the patients. For vertigo of transient and otherwise undeterminable causation, the use of adrenalin may steady the circulation of the premonitory phase of the trouble and prevent the occurrence, or greatly abate the severity, of the attack.

CLEMENS.

28. The patient, male, aged twenty-eight, suffered from deafness in his right ear and certain tones were heard double. When the left ear was tightly closed and a tuning-fork was sounded, two distinct tones were heard in the right ear, one appearing to be just the octave of the other. The occurrence of this symptom was first observed by the patient one morning when his little child was yelling, when sounds of a certain pitch were heard double. Under the use of the Eustachian catheter, sodium bromide, and incidental nasal treatment, the symptom disappeared.

CLEMENS.

C.—METHODS OF EXAMINATION AND TREATMENT.

29. **Richards.** The use of gelato-glycerin bougies in the treatment of acute earache in young children. *Four. American Medical Association*, January 24, 1903.

30. **Snow.** Conservatism in the treatment of acute mastoiditis. *Four. American Medical Association*, January 31, 1903.

31. **Matlack.** Electrolysis in Eustachian salpingitis with stricture ; report of seventy-five cases. *American Medicine*, February 7, 1903.
32. **Lucae.** A practical apparatus to apply the air douche in ear disease. *Deutsche med. Wochenschr.*, No. 11, 1903.
33. **Eckstein.** The therapeutic value of hard paraffine injections in general surgery. *Berl. klin. Wochenschr.*, November 12 and 13, 1903.
34. **Moskkowicz.** On subcutaneous paraffine injections. *Wiener klin. Wochenschrift*, 1903, No. 2.
35. **Rode.** Adrenalin in rhino-laryngology. *Wiener klinische Rundschau*, 1902, Nos. 33 and 34.
36. **Katz.** Adrenalin in examination and treatment of the nose. *Wrat-schebnaja Gaseta*, 1902, Nos. 49, 50, and 51.
37. **Kassel.** A substitute for warming the laryngeal mirror. *Arch. f. Laryngol.*, vol. xiii., p. 462.
38. **Valentin.** The cystoscopic examination of the naso-pharynx, or salpingoscopy. *Arch. f. Laryngol.*, vol. xiii., p. 410.
39. **Veis.** The importance of snoring. *Arch. f. Laryngol.*, vol. xiii., p. 321.

29. Although the use of bougies was originated by Gruber, he never described how they could be made. RICHARDS has taken the main ingredients of Wood's formula, adding 3% of carbolic acid for its well-known properties, and, with the aid of an apothecary, managed to overcome the pharmaceutic difficulties in their manufacture. A description of their use and preservation is included in the paper. CLEMENS.

30. SNOW's object is to demonstrate that there is a middle ground for treatment, practically safe, based on free drainage and prevention of pus development. He advocates the use of the so-called internal Wilde's paracentesis, to accomplish the first indication, and the use of cold or heat, to meet the second. The cases must be carefully scrutinized, and, unless marked improvement is noted within twenty-four to thirty-six hours, better drainage must be secured, since cold or heat will not avail without it. Forty-five consecutive cases were treated on these lines without failure. All were acute, and each presented the indications usually accepted for the external operation. CLEMENS.

31. Among the general conclusions drawn by the writer, it is said that electrolysis has been of service in all forms of deafness (excluding purely labyrinthine conditions), and especially so in cases of moderate degree, where the pathological changes were located in the tube. In sclerosis with more or less stenosis of the tube, hearing was restored to a greater extent than by any other method known to him, but how permanently cannot as yet be

stated. In sclerosis without marked tubal obstruction but with secondary involvement of the auditory nerve, electrolysis was unavailing. In cases of incipient salpingitis, the swelling disappeared completely and the functions were restored with but a few applications of the current, combined with treatment to the nasal membranes. To insure the best result, the treatment should be supplemented by other measures that have formerly been found of service. Intranasal irregularities must be corrected. MATLACK is convinced that electrolysis marks a distinct advance in aural therapy.

CLEMENS.

32. A bottle with carbonic acid gas is connected with a manometer and a screw vent. The bottle is connected with a tube to the catheter, and on opening the vent the carbonic gas escapes under uniform pressure to be used in catheterization. Unpleasant features in the use of carbonic acid gas have not been observed, though it cannot be employed in the air douche for fear of inspiration.

THIELE.

33. Instead of employing the vaseline recommended by Gersuny for subcutaneous use, the author employs a paraffine which melts at 58° , and, owing to its rapid coagulation, preserves its original form, and the danger of a pulmonary embolus is lessened, and the paraffine cannot be absorbed. The manifold application of this method is illustrated by numerous examples. In addition to correcting the saddle-shaped noses, the deforming cicatricial retractions observed after mastoid operations and operations on the frontal sinus can be overcome after this manner. In these cases the scar tissue is freed from its underlying bony parts through a small incision, and a few days later the paraffine is injected.

MÜLLER.

34. Clinical observations on man through a period of three years have shown that paraffine is not absorbed. In histological examination of paraffine injections after two to twelve months, it has been shown that the paraffine is replaced by a large number of small, round, well-defined, open spaces, and slight round-cell infiltration without giant cells. Between large masses of vaseline there is a network of very fine detritus, in which many multinuclear leucocytes are to be seen. The intervening spaces are filled with serum. Projections pass into the vaseline deepest from the wall of the large cavities.

On injections in scar tissue or intradermic injection, a pronounced small-cell infiltration and hypertrophy of the connective-

tissue cells surrounding the vaseline are found, and especially a large number of giant cells. Resorption does not take place, but an encapsulation. From these observations a poisonous action of the vaseline can be denied. After two weeks the vaseline is so fixed by the reaction of the surrounding tissues that it cannot become displaced.

To prevent emboli the paraffine injection should be preceded by a Schleich injection, which is then aspirated to see whether there is any blood in the syringe. Instead of hard vaseline the usual German vaseline is recommended, which melts at 36° to 40° . It is sterilized by heating until it boils. When the vaseline has grown quite cold in the syringe it can be injected. In the later stages the vaseline forms cartilage-like tumors.

Twenty-eight cases of saddle-nose deformity were treated with paraffine injections. To obtain a narrow dorsum of the nose a clamp consisting of two lead plates is applied during the first week.

WANNER.

35. The action of adrenalin was examined on 140 patients. In eighty it served for operations. Its action is produced more quickly by vigorous inunctions lasting half a minute. The temporary anæmia of the parts lasts from ten to thirty minutes. After one hour the parts become distended and in the next two to four hours return to their normal size.

The postoperative hemorrhages are in many cases decidedly greater than when this agent is not used. Adrenalin is capable of arresting paracheimical hemorrhages, but has no effect on arterial hemorrhages. The strongest concentration is 1:1000. Acute inflammations react to a solution of 1:10,000. It has no anæsthetic action, and it can be well combined with cocaine. In certain cases where cocaine has produced symptoms of intoxication, the application of adrenalin seems to have acted as an antidote. Concentrated adrenalin solutions never produce any symptoms of poisoning. It can be given internally or subcutaneously without harm.

WANNER.

36. In some cases adrenalin has no action on the nasal mucosa. Like any inflamed mucous membrane of the upper respiratory tract, its action on adenoid tissue in the pharynx is energetic, and it controls small hemorrhages on the nasal septum. It does not prevent after-hemorrhage. Strong solutions may produce inflammatory reactions in the nose, which may be followed by a superficial necrosis.

SACHER.

37. After rubbing the mirror with moistened cotton and dipping it in cold water, it can be used for the examination and does not grow clouded. ZARNIKO.

38. The condition of the tubal ostium and its surroundings, as well as of the upper wall of the naso-pharynx, the posterior surfaces of the velum, and the deeper parts of the larynx have been examined and studied by a cystoscope-like apparatus. The pictures are of great interest, and the method unquestionably is an addition to our diagnostic measures. ZARNIKO.

39. According to the author, snoring takes place when the mouth is open as well as when it is closed. In those that snore, a characteristic appearance of the velum is found: redness, occasionally pale oedema, prolongation of the uvula. Paræsthesia of the pharynx, catarrh of the Eustachian tube, and smaller troubles are, according to the author, a consequence of snoring. To overcome snoring, a simple bandage fixing the chin is recommended. (The author has appeared to confound mouth-breathing with one of its consequences, snoring, which has led to mistakes.) ZARNIKO.

d.—DEAFMUTISM.

40. **Kreidel and Alexander.** The results of a statistic of the bodily and mental development of deaf-mutes in Austria during the first year. *Wiener klin. Wochenschr.*, 1902, No. 16.

41. **Habermann.** The development of deafmutism after middle-ear diseases. *Arch. f. Ohrenheilk.*, vol. lvii., 579.

40. The authors have investigated the kinship, the kind of deafmutism, speech, mental capacity, and walking of a certain number of deaf-mutes, in order to determine the bodily and mental capabilities in the early years before admission to schools. They had hoped thereby to receive instructions on the best methods of early education. WANNER.

41. **HABERMANN** has added a fourth case to the three cases of deafmutism from occlusion of both windows, which he has demonstrated in Dresden and Breslau. In the present case the histological examination showed as the cause for the deafmutism in a woman of forty-one years of age, fixation of the stapes, bony occlusion of the round window, following probably a middle-ear suppuration occurring in the first years. No pathological changes of importance were found in the brain, the auditory nerves, nor in the middle ear. HAENEL.

EXTERNAL EAR.

42. **Sack.** The treatment of otitis externa furunculosa with packing. *Monats. f. Ohrenheilk.*, 1903, 1.
43. **Iwanow.** On local anæsthesia in paracentesis of the drum membrane. *Prakt. Wratsch.*, 1902, No. 49.
44. **Gomperz.** New artificial drums. *Wiener med. Wochenschr.*, 1902, Nos. 50, 51.
45. **Thompson.** A knife blade in the ear. *Cincinnati Lancet-Clinic*, March 28, 1903.

42. The author recommends Lamann's treatment of external otitis, which consists in packing the canal with a 10 per cent carbolic glycerine gauze, and advises during the treatment of the diseased ear to instil 10 per cent. solution of carbolic acid glycerine in the healthy one. PIFFL.

43. The author considers Bohain's mixture (carbolic acid 2.0, menthol, cocaine, each 0.5) and Gray's mixture (cocaine, aniline oil, absolute alcohol, 5.0) unsuitable, because they produce an irritation of the drum. As the action of cocaine is increased by the admixture of adrenalin, he recommends a mixture of cocaine 0.5 and 1.0 of a 1.0% adrenalin solution. Small pledgets of cotton soaked in this solution, heated, are applied to the drum, and after ten minutes complete anæsthesia results. SACHER.

44. In the cases where a perforation in the drum does not close on cauterization with trichloroacetic acid, an artificial drum may be applied. In those cases only in which the drum is disturbed except a small margin and the hammer still remains, can good results be expected from an artificial drum.

These are prepared, according to the author, from thin celluloid plates, and vaseline of a melting point of 41-42° C. is injected. Little plates of silver 0.02-0.004mm thickness are also used, and are introduced with a pair of forceps. Recently he has employed fluids of chemically pure leaf silver under 1 μ thickness. The introduction and removal are attained by syringing. All of these artificial drums could produce no irritation of the tympanic mucous membrane, and may remain in place for weeks or months without causing suppuration. Before introduction, the canal is thoroughly cleansed with alcohol and ether and 5 per cent. menthol vaseline.

The accompanying case-histories show that by means of these drums the hearing distance was increased from a few centimetres to several metres for whisper. These prostheses are especially

suiting for children, where a destruction of the drum has taken place after scarlet fever.

WANNER.

45. Patient, male, aged twenty-five years, complained of a mixed bloody and purulent discharge from the right ear for past seven weeks; hearing somewhat impaired. The external meatus was found filled with exuberant granulations. A probe encountered a rough hard substance suggesting metal. After the granulations were removed, a black substance could be seen imbedded in the auditory canal, which was found so firmly fixed that it could not be extracted by the use of forceps or hook. A careful examination behind and below the ear demonstrated a foreign substance extending an inch into the tissues of the neck. Through an incision behind the ear, a broken knife-blade more than an inch long and of the usual width was removed. It was below the deep cervical fascia and partially imbedded in the sterno-mastoid muscle. Two years ago the patient was stabbed in the ear, but the wound promptly healed and gave no trouble until the present time.

CLEMENS.

THE MIDDLE EAR.

a.—ACUTE OTITIS.

46. **Eitelberg.** On the symptomatology of acute inflammations of the ear. *Deutsche med. Wochenschr.*, No. 5, 1903.

47. **Hofmann.** Two cases of middle-ear suppuration after scarlet fever with unusual cause. *Wratschebnaja Gaseta*, 1903, No. 8.

48. **Massier.** Two cases of circumscribed abscess of the temporal fossa of otitic origin. *La presse otolaryngologique Belge*, 1902, vol. xi.

49. **Large.** A case of exophthalmos following mastoiditis. *Annals Otolaryngology, Rhinology, and Laryngology*, Nov., 1902.

46. In discussing the etiology of acute otitis media, the inhalation of fluids as well as manipulations in the nose are emphasized. During the course of an inflammatory process in the middle ear and in the external canal, a sudden intense pain, accompanied by other severe symptoms, may be regarded favorably, though this view is purely empirical. In the course of an otitis media a sudden rise of temperature may be harmless, and in no connection with the original trouble. A number of cases is added.

THIELE.

47. **CASE I.** Double-sided, abundant middle-ear suppuration in a girl fifteen years old, after scarlet fever of four months' duration. Left facial paralysis. Large cavities filled with pus in the region of the mastoid process. On opening the cavities on the

right side there was a number of small and in the left of larger sequestra lying free in pus, representing the entire mastoid process. Recovery.

CASE 2. A boy eight years of age with acute otitis on the right side after scarlet fever. Aside from very severe symptoms of a purulent mastoiditis (inflammation with fluctuation in the region of the mastoid, sagging of the upper and posterior meatal walls, high fever, headache), the operation could not be performed on account of the nephritis with ascites. Gradual diminution of the mastoiditis, with complete healing of the drum and normal hearing without operation.

SACHER.

48. MASSIER observed two cases of abscess of the temporal fossa, which were unusual and ran a different course. The one followed a dermatitis of the external auditory canal; the second was in connection with an acute middle-ear inflammation.

BRANDT.

49. The patient, male, aged thirty-five, was operated upon for nasal polypi, forty being removed from the nostrils in six sittings. Sometime afterward a quantity of cerumen was removed from both auditory canals, and on the following day otitis media developed. A free paracentesis was performed, allowing a quantity of serum to escape. A few hours afterward the pain was entirely relieved. On the third day after the paracentesis, pain over the mastoid began, which was overcome by the application of the ice-bag. The temperature was irregular in character. On the twelfth night the patient became delirious, temperature 104° F., exophthalmos with diplopia occurring in the left eye. The mastoid was opened and found filled with offensive pus. No fistulous opening into the cerebral cavity could be detected. The following day the exophthalmos disappeared and the temperature fell to 99.5° F., and the case made a satisfactory recovery.

CLEMENS.

b.—CHRONIC OTITIS.

50. **von Herrenschwand.** Contribution to the surgical treatment of purulent mastoiditis. *Inaug. Dissert*, Bern, 1902.

51. **Baumann.** The tertiary syphilitic middle-ear suppuration. *Inaug. Dissert*, 1902, Bonn.

52. **Alexander.** On the performance of the radical operation with Schleich's local anæsthesia. *A. f. O.*, vol. lvii., p. 91.

53. **Eeman.** A new method of dressing after the radical operation for the cure of the purulent otitis with caries, cholesteatoma, etc. *La Presse oto-laryngologique Belge*, 1903, No. 1.

54. **Goldstein.** Primary tuberculosis of the ear followed by mastoiditis. Report of four cases. *N. Y. Medical News*, March 14, 1903.

50. This paper emanating from Kocher's clinic in Berne requires a discussion not so much on account of its scientific contents as it is of importance to show the position which a number of the first surgical clinics assume in regard to otology. The paper consists principally in the histories of fifty-nine patients who were operated on for purulent mastoiditis in the clinic at Berne from 1874 to 1901. Unfortunately there are a great many defects in the histories in regard to the otoscopic and the functional conditions. It seems to us that the author's judgment in a certain number of cases has not been correct: for instance, in Case 7, where unquestionably a suppuration of the labyrinth with death from pyæmia existed; in Case 31, a chronic middle-ear suppuration with cholesteatoma, which is classed under the acute cases; and in regard to a number of cases of cholesteatoma in which this condition was evidently not recognized. The general remarks and conclusions are not convincing, especially as the author depends entirely upon his own material, without regard to the special literature on the subject. For example, on page 4 it is stated that an objection to Stacke's operation is the almost complete loss of hearing; on page 47 that the Schwartze-Kocher trephining of the mastoid process leads in most chronic cases to a good result, unless streptococci are the agents in question; on page 48 that the presence of streptococci should indicate a more radical intervention from the beginning; and, finally, to recover a good hearing power, an operation should be done very early. In addition there is a number of slight arithmetical inaccuracies.

Of greater interest to the reviewer was a criticism of the methods and results of operations on the mastoid process performed in the Berne clinic. He states on page 4: It will be seen from our tables that until the very latest time, in acute as well as in chronic cases, trephining of the antrum or of the entire mastoid process was the only surgical operation performed. Stacke's operation was done in only two cases, and both of these were acute. Why in these cases this operation was undertaken cannot be told from the case-histories. The results are as follows: among 59 operations, 8 fatal cases, of which according to the author only 3 might be placed to the account of an insufficient treatment; 10 cases unhealed, 4 injuries to the sinus, 2 facial paralyses, in 2 the antrum could not be found, in 16 marked

or total loss of hearing. Case 39 was an unusually unfortunate one for the operator, for without finding the antrum he succeeded in injuring the sinus, the facial nerve, and the dura of the middle cerebral fossa. The autopsy four days later revealed the antrum and tympanic cavity to be full of pus. The author appears to recognize that these results are not quite up to what is obtained in certain special clinics, for he states in a preface that the operations were mostly performed by rapidly rotating assistants, and the results correspond to those obtained by a practitioner but little versed in otology. On account of this, and while there are enough cases with complications of various kinds leading into the province belonging to the general surgeon, the author thinks it is desirable that a surgeon should speak on this subject. It is, of course, quite plain that a practising physician, under unfavorable circumstances and without complete control of the technicalities, must frequently be forced to operate, and not always get such good results as the practised specialist, though it does not seem right that a large clinic should make a rule from these exceptional cases and for years perform these important operations on so necessary a sensory organ without proper indications and suitable training. If the surgeon should in a similar manner encroach upon the territory of the eye specialist, there would be a storm of indignation arising not only from the ophthalmologists but from many medical circles. And what is true for the eye holds for the ear as well. If the publication of this author serves the purpose of showing that the University at Berne is in great need of a special ear clinic, it will at least have achieved considerable purpose.

RAU.

51. A patient fifty-five years of age was suddenly taken ill with ear pain. There were polypi and small sequestra in the canal. The drum was very much reddened, pulsating discharge, nose and pharynx normal. As the suppuration remained profuse, a trephining operation was done after four months. No especial change in the mastoid process. Eight days later, pain in the neck; a syphilitic ulcer was found in the pharynx. Iodide of potash was given. The profuse middle-ear suppuration was healed in three days, the ulcer got well, so that the syphilitic nature of the middle-ear suppuration is proven. Report of literature.

BRÜHL.

52. After experimenting with local anæsthesia according to Schleich in two cases of radical operation, the author cannot

recommend this procedure. It was not possible to obtain a sufficient analgesia to clear out the tympanum and the antrum as well as the tympanic opening of the tube. HAENEL.

53. This author treated one of his radical operations accidentally with boracic acid in powder form, and was astonished at the rapid epidermization of the cavity. Further experiments have convinced him that this procedure should receive more attention. The technique is as follows: after the operation on the bone, the flap is pressed with iodoform gauze against the bony surface, and the wound behind the ear is closed with sutures. On the first change of dressing, four, five, or six days after operation, the gauze is carefully removed and the cavity dried. Then the entire cavity is filled with boracic acid up to the entrance of the external canal. The aural region is covered with iodoform or boracic-acid gauze. The dressing must be changed daily for about fourteen days. As the secretion diminishes, the quantity of powder may be reduced, so that in the last stages the unhealed places only are covered with a slight layer of boracic acid. The granulations remain in normal bounds, and the epidermization progresses rapidly. BRANDT.

54. The cases reported are considered primary tubercular infection. All of the number were seen more than three years ago; three of them are still living, and fail to show any tubercular trouble at present. There is no evidence or history to demonstrate the presence of tubercular affection in the families of these patients. In three of the cases the mastoid was extensively involved, showing an active and rapid invasion. The mastoiditis developed from a pre-existing chronic otitis media suppurativa, and was apparently due to a direct invasion of the tubercle bacillus. The wounds healed firmly by healthy granulations, and all tubercular trouble ceased with the removal of the local process, which is in marked contrast to the process of repair when systemic invasion is present. CLEMENS.

C.—CEREBRAL COMPLICATIONS.

55. **Schulze.** On empyema of the saccus endolymphaticus, *A. f. O.*, vol. lvii., p. 67.

56. **Papanikolaou.** A remarkable case of Bezold's mastoiditis with extradural abscess. *M. f. O.*, 1903, 1.

57. **Hölscher.** A case of abnormal development of an accessory occipital sinus after one-sided thrombosis of the transverse sinus. *Wiener klin. Rundschau*, 1902, No. 28.

58. **D'Eloore.** Chronic suppurating otitis complicated with cerebral abscess. *La Presse oto-laryngologique, Belge*, 1902, vol. ii.
59. **Fliess.** Cerebral abscess with sudden paralysis of the respiratory centre. *Deutsche med. Wochenschr.*, No. 14, 1903.
60. **Lannois et Armand.** Abscess of the cerebellum after labyrinthine suppuration. *Arch. internat. d'otol.*, etc., 1903, p. 14.
61. **Grunert.** Further contribution to infectious thrombosis of the bulb of the jugular vein and on the question of its operative treatment. *A. f. O.*, vol. lvii., p. 23.
62. **Voss.** On the opening of the cavernous sinus in thrombosis. *Centralbl. f. Chir.*, 1902, No. 47.

55. With due regard to Jansen's paper (1893) on this same subject, and to the cases of Kümmel and Muck, the author reports on the origin, extension, and course of a case, which was confirmed at autopsy. Complete operation after middle-ear suppuration of half a year. Caries of the tympanic walls and of the antrum, and below the facial spur. After the operation facial paralysis. After nine weeks of apparent health, sudden illness with severe headache, vomiting, vertigo, but without fever. The reflexes, motility, and sensibility were normal, as well as the eye grounds. The symptoms persisted for five days, returned after two weeks, then on the following day patient had a severe chill, a very small pulse, and died in symptoms of paralysis. A suppuration of the labyrinth, which was undiscovered and not proven by the hearing test, especially of the vestibule and of the semicircular canals (infection from the patent oval window), had led to an empyema of the saccus endolymphaticus as large as a cherry, which ran a course without symptoms, until, from the progress of the inflammation about two and a half weeks before death, under the appearance of headache, vomiting, and nausea a cerebral abscess developed. Death resulted from rupture of the empyema of the saccus endolymphaticus into the meninges. The following conclusions are reached:

(1) The empyema of the saccus endolymphaticus does not necessarily cause fever, and may be present without disturbing the sensorium. The symptoms, as pronounced by Jansen to be characteristic, do not necessarily belong to the picture of uncomplicated empyema of this sac.

(2) An empyema of the sac may exist, in addition to the labyrinth suppuration, without causing any characteristic clinical symptoms, or any which can be used in the differential diagnosis from a suppuration of the labyrinth.

HAENEL.

56. This case does not present any peculiarities. The early healing of the middle-ear affection with a continuation of the process in the mastoid is known to every aural surgeon. PIFFL.

57. The patient, fourteen years of age, had suffered since early childhood from middle-ear suppuration on the left side, and, six years before the onset of the threatening symptoms which led to operation, had passed through a severe brain inflammation. The autopsy after the operation (eleven days later) showed an abscess in the left cerebellar hemisphere, an old organized thrombosis of the left sigmoid sinus, and compensatory formation of an occipital sinus on the opposite side.

According to the author, the sinus thrombosis was the result of the so-called brain inflammation in the eighth year, and the compensatory dilatation of the right occipital sinus then took place. At the same time, owing to the adjustability of the child's skull, the left jugular foramen and the surrounding emissaries remained back in their development, while the corresponding outlets of the right side became abnormally dilated.

From the case-histories it is interesting to note that in the course of the disease apoplectiform attacks were present, which were regarded as hysterical. (From the severity of the picture which the operation showed, these attacks were with great probability due to a deep affection of the brain, and treatment ought to have been more radical than simple electricity.)

WANNER.

58. Report of a case of cerebral abscess in which three operations had been performed. The patient was in the advanced stages of tuberculosis. Between the purulent area in the cerebellum and the caries of the mastoid process there was a distinct connection. The nervous symptoms which had bothered the patient for six months were presumably due to a pachymeningitis on the posterior surface of the temporal bone. Notwithstanding the intracranial pressure, the pulse remained normal; temperature was often subnormal. The important symptoms were: headache, fibrillary twitching of the tongue, increase of the reflexes, Romberg's symptom, and oculomotor paralysis.

BRANDT.

59. A patient with left-sided chronic otorrhœa was taken suddenly ill with symptoms pointing to a cerebral abscess. At the beginning of the operation, after the first few strokes of the chisel, a paralysis of respiration set in, which led to death. The heart

continued to beat for hours. The diagnosis of cerebral abscess was confirmed at autopsy.

THIELE.

60. A cerebral abscess in a patient seventeen years of age, following left-sided chronic middle-ear suppuration. Clinical symptoms uncertain. Irregular fever, headache, stupor; the antra opened with only momentary improvement. Three weeks later, after the onset of epileptiform contractions in the right leg, the left temporal lobe and the cerebellum were punctured. An abscess was found in the latter. Death followed. The macroscopic examination of the temporal bone showed a diffuse labyrinthine suppuration, dirty discoloration and thickening of the seventh and of the eighth nerves. The bony surface as well as the sinus was normal. In the left cerebral hemisphere, two abscesses which did not communicate with one another.

OPIKOFER.

61. According to GRUNERT, the sinus operation in conjunction with ligation of the jugular is sufficient for most cases, and even for those cases where the infectious sinus thrombosis is complicated with a bulbo-thrombosis. The recovery takes place through obliteration of the bulb, with fibrous closure of the openings of the inferior petrosal sinus and the venous communications between the bulb and the vertebral vein. In the cases which run without fever after operation, one should not attack the thrombus in the bulb, not even if it is in a condition of purulent disorganization. Careful loose packing up to the bulb, with careful irrigation, is all that is required. When the fever continues after the sinus operation as a result of the absorption of infectious matter from the bulb, as soon as the general condition permits one should always attempt the less vigorous treatment, which consists, first, in attacking the bulbous contents from the cerebral end (mopping, irrigation with an introduced canula, slight packing, careful entrance with a sharp spoon). To show the danger of the curette, a case is quoted where, following perforation of the internal wall of the bulb, a fatal subdural hemorrhage took place underneath the entire hemisphere of the side operated on. Second, we should attempt to reach the bulb by way of the internal jugular vein. The immediate closure of the cervical wound after ligation of the jugular is a mistake in every case. As long as the jugular vein has a normal amount of blood, it should not be incised. If it contains infectious matter, the external wall should be excised with irrigation of the bulb

from below. Third, we may attempt by irrigation of the bulb from above or below to remove the contents of the bulb. By careful judging of the degree of pressure, these irrigations can be made without danger. If these three methods should not prove successful, or when the general condition does not permit of an expectant treatment, as a last resort the bulb should be directly and radically opened.

Three cases of operative exposure and obliteration of the thrombosed bulb of the jugular vein are reported. In the cases where the very prominent transverse process of the first cervical vertebra is in the way of the bulb operation, and has to be resected, to avoid danger of injuring the vertebral artery Grunert recommends another operative procedure, which he has up to now only performed on the cadaver. After the complete operation, the lower and sometimes the inner part of the anterior bony auditory wall, the lower part of the tympanic margin as well as the floor of the tympanum, are removed up to the labyrinth wall. From this point it is possible by removing the roof of the attic, to expose the sulcus of the bulb. A disturbance of the maxillary joint need not be expected. There is some danger of wounding the internal carotid.

HAENEL.

62. The cavernous sinus was opened in a patient where meningitis already existed. The first and second branch of the fifth nerve, the Gasserian ganglion, behind which the sinus is situated, serve as landmarks. Removal of the base of the skull according to Lexer. Exposure of the ganglion Gasserii after removal of the bone of the base of the skull up to the foramen ovale and rotundum. The autopsy showed that it had been possible to open the sinus for a distance of 6 to 8mm.

BRÜHL.

d.—OTHER MIDDLE-EAR DISEASES.

63. **Haug.** Foreign body in the tubal region after the previous radical operation. Tonsillar abscess. *A. f. O.*, vol. lvii., p. 45.

64. **Tansley.** A piece of bougie in the Eustachian tube. *Laryngoscope*, January, 1903.

65. **Hartz.** The pathology and diagnosis of otitis media insidiosa (*i. e.*, sclerosis) with remarks on the treatment. *Annals of Otology, Rhinology, and Laryngology*, November, 1902.

66. **Amberg.** A case of scotoma auris partiale centrale et periphericum. *Jour. Amer. Med. Assoc.*, January 17, 1903.

67. **Baldwin.** The teeth as a cause of pathologic conditions in the throat, nose, and ear. *Jour. Amer. Med. Assoc.*, January 31, 1903.

63. A small pledget of cotton disappeared in the depth of the auditory canal in a patient upon whom a radical operation had been performed. After unsuccessful attempts at removal on the side of the patient, the patient returned suffering from pain in the ear and in the neck, and a swelling of the canal and tympanic walls, and fetid discharge. The Eustachian tube was impassable; on the fifth day chill; on the seventh an abscess appeared in the peritonsillar tissue. On evacuation the cotton pledget appeared. Immediate improvement and recovery after five days. It is supposed that the piece of cotton was forced during the attempts at extraction through a defect in the tympanum, and had reached the peritonsillar tissue through the levator muscle. HAENEL.

64. TANSLEY describes a case of deafness and tinnitus treated by electrolysis. During one of the treatments its application caused such pain and increase of the deafness and tinnitus that the patient finally applied to him for relief. At his first examination he discovered something protruding from the tube that gave a metallic feel to the probe. After several attempts he succeeded with a pair of delicate forceps in removing the bulbous point of a bougie that had broken off within the tube. The case is reported not only to demonstrate one of the dangers attending this mode of treatment but to pronounce his unqualified disapproval of it. CLEMENS.

65. Sclerosis is fundamentally a hyperplasia of the bony capsule of the labyrinth, or a transformation of cartilage into bone with hyperostosis. It is initiated by a constitutional diathesis, such as inflammatory rheumatism, gout, syphilis, and scrofula, by diseased tonsils in the pharynx and vault, suppurations with calcareous deposits in the tympanic cavity, exposure to wet, cold, and injury. It is usually found localized in the labyrinth capsule near the stapes articulation with the oval window, inducing fixation of the ossicles. It may involve the semicircular canals and cochlea, producing symptoms of nervous deafness. The functional test, the subjective symptoms, and family history permit an early diagnosis. The symptoms are, hyperæmia of the promontory, heredity, Schwabach test showing prolonged bone conduction, Rinne negative to a varying degree, and defective perception of one-half to one and one-half octaves of the low tones. Probably 10% of the middle-ear diseases are true sclerosis and are designated synonymously, capsulitis labyrinthi, oto-sclerosis, spongification, dry middle-ear catarrh, and otitis media insidiosa. The therapy is

effective in early stages of the disease by hygienic and medical treatment.

CLEMENS.

66. The patient, female, aged about forty, was under treatment for chronic middle-ear catarrh which followed an attack of grippe. There did not seem to be anything unusual in the case, until the following observation was quite accidentally discovered by her. It appears that she could hear a clock when it was held in a position upward from her right ear, but that she could not hear the same clock at the same distance when held on a level with the ear. AMBERG verified this in a very careful examination, and found in addition that the watch was heard on the left side at very reduced distance opposite the canal, and not above and below the auricle. Several weeks later the symptom was less constant, and finally it could not be demonstrated, although the patient reported that she still heard better in the right ear when the clock was held high.

The writer does not attempt to explain the phenomenon, but is inclined to attribute it to the formation of the concha and meatus, to the quality of the membrana tympani, or to a functional neurosis.

CLEMENS.

67. In about 62.5 % of the cases of otitis the teeth were found diseased, and when the teeth were cared for the improvement was much more rapid. Seven cases of earache were due to exposed dental pulp; two cases of severe earache occurred during the regulating of cuspid teeth; earache has occurred during the filling of teeth, this when there was no pain in the teeth themselves; one case of earache and unilateral coryza was due to sensitive dentine, both were almost immediately relieved by filling of the tooth, and both promptly returned on its removal; eleven cases of tinnitus were much relieved, if not entirely cured, by treatment of the teeth. A very strong plea is made for the association of dentistry with otology, rhinology, and laryngology in clinical work.

CLEMENS.

(*To be continued.*)

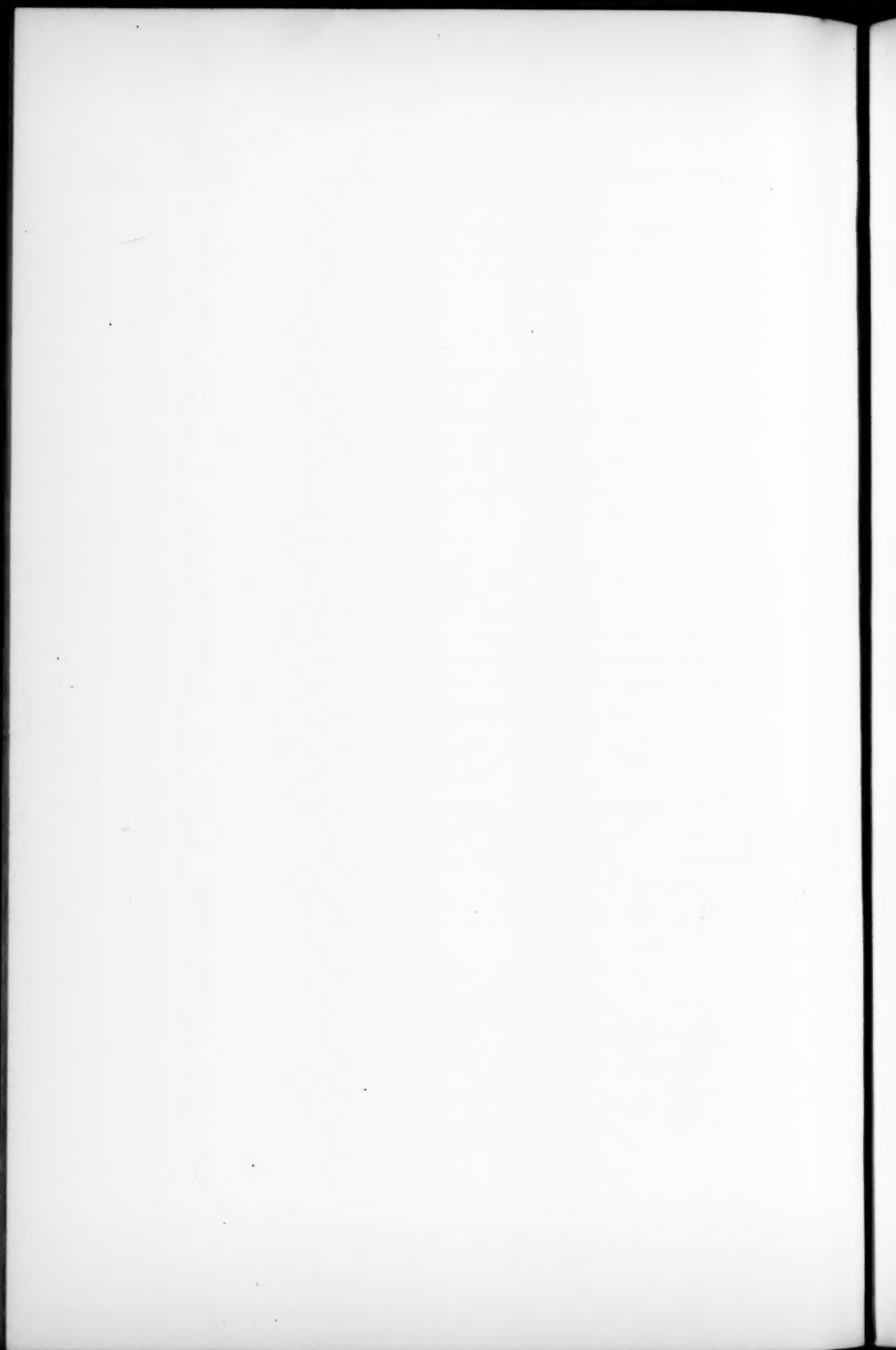
BOOK REVIEWS.

XII.—The American Illustrated Medical Dictionary. By W. A. NEWMAN DORLAND, A.M., M.D. Third edition. Thoroughly revised. Large octavo, 800 pages, bound in flexible leather. W. B. Saunders & Co., Philadelphia, 1903. Price \$4.50 net.

This is a very elaborate and beautifully gotten-up dictionary. The illustrations, many of which are in color, are excellent, especially those on the blood, malarial parasites, and spinal cord. A great deal of useful information is arranged in the form of tables. The choice of type and paper is admirable. The flexible leather binding adds comfort to the pleasure and satisfaction derived from using such a book. A. K.

XIII.—The American Pocket Medical Dictionary. By W. A. NEWMAN DORLAND, M.D. 566 pages and 64 extensive tables; flexible leather. W. B. Saunders & Co., Philadelphia, 1903. Price, \$1 net.

A pocket edition of the preceding book, but without plates. Many tables are inserted, including a table of doses at the end. The selection of words is apparently complete and excellently fulfils its purpose. A. K.



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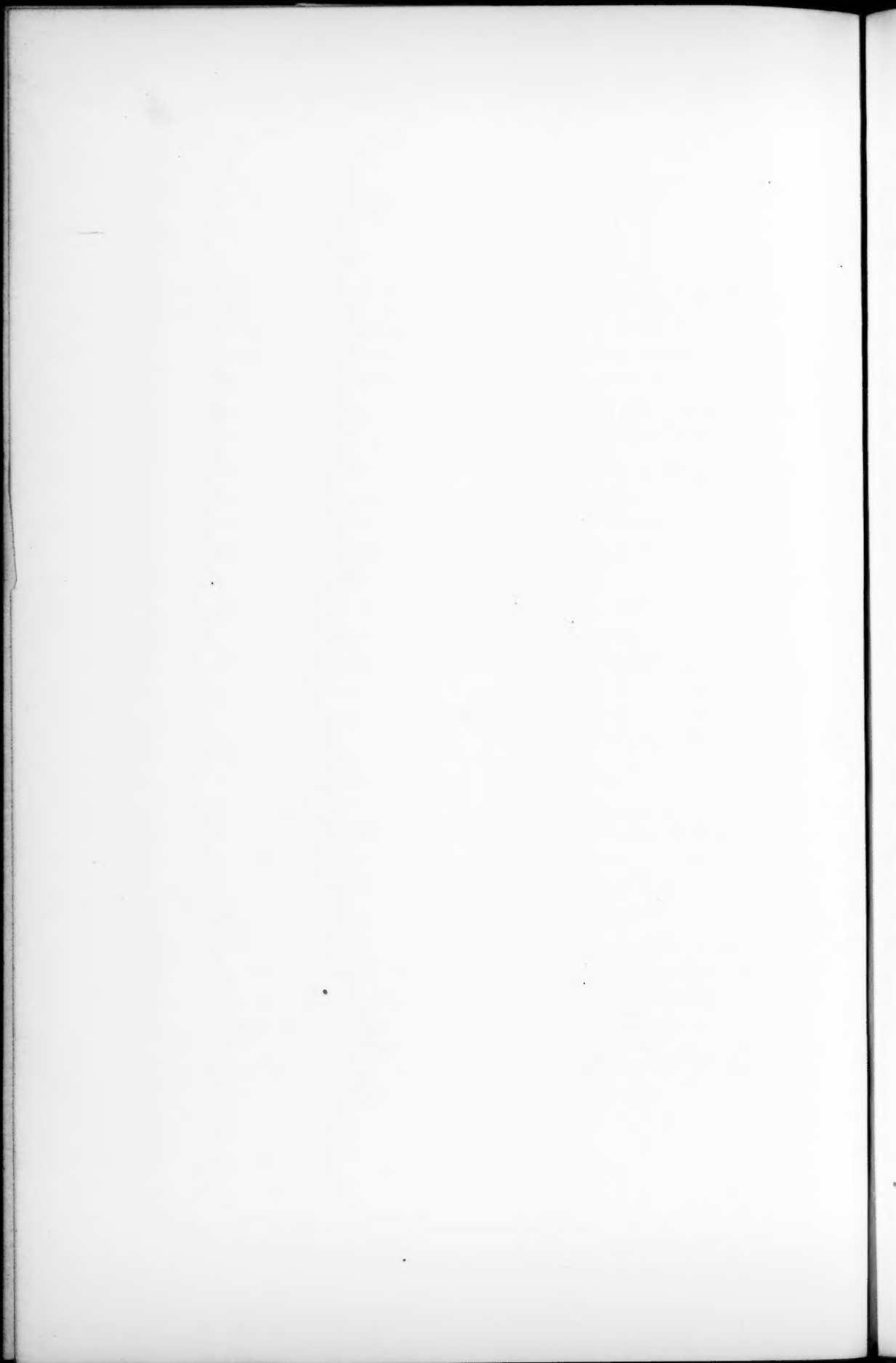
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